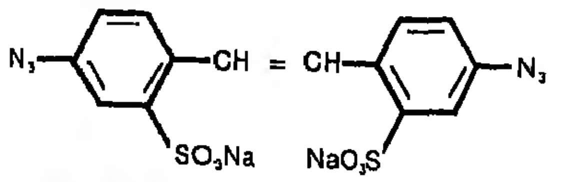
NEWS AT HOME

NEWS ABROAD

THE MARKETS



CMR MARKET INDEX

CHEMICAL MARKETING REPORTER's market index of chemicals and related materials (100=1974 average), based on 97 key commercial chemicals, appears alongside with data for two weeks ago, last month and last year.

Oct. 24, 1986	151.77
Oct. 10, 1986	151.23
Sept. 26, 1986	152.04
Oct. 25, 1985	152.41

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Gas-Methanol Gets Boost From EPA

Environmental Protection Agency says it has decided to remove certain restrictions from an unleaded gasoline and methanol blend originally developed by E.I. du Pont de Nemours & Co.

In January 1985, EPA granted Du Pont a waiver for its gasoline-alcohol fuel blend, which contains five percent methanol and 2.5 percent co-solvent alcohols, on the condition that the producers adhere to an evaporative index to limit any possible increases in fuel volatility.

EPA said it was not convinced from information then available that using the American Society for Testing and Materials (ASTM) standards as Du Pont proposed would provide sufficient control of fuel volatility and thus the evaporative hydrocarbons from vehicles using the blend.

Hydrocarbon emissions contribute to the formation of ozone, an EPA-regulated pollutant, which causes respiratory problems.

In the decision signed October 22 by EPA Administrator Lee M. Thomas, the agency noted that information obtained since the original decision shows that volatility levels of commercial gasoline on the market today have been rising and are close to the ASTM maximum limits.

The agency said it now believes application of the ASTM standards is sufficient to ensure that evaporative emissions of vehicles using the Du Pont blend will

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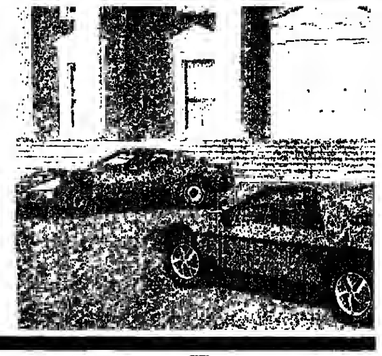

CARS OF THE FUTURE: US agency now believes that use of ASTM Standard will allow methanol-gas automobile engines to attain acceptable emissions levels.

Chemical Marketing Reporter
VOLUME 230
Number 18
NOVEMBER 3, 1986

Trade Secret Safety Enhanced by New Law

President Reagan has signed into law legislation amending the Freedom of Information Act (FOIA) to give businesses a greater opportunity to protect trade secrets and other confidential information from disclosure by Federal regulatory agencies.

The measure, which establishes new procedures for determining whether to release business information that has been designated as confidential, is supported by drug and chemical companies.

It requires that companies be notified when an organization or individual files an FOIA request for their business records, some of which may reveal trade secrets exempt from disclosure. The notification period could delay release at least six weeks if the information was found to be public.

Consequently, the legislation was opposed by public interest groups that often file FOIA requests on grounds it would delay release of much information that should be public.

But Rep. Glenn English (D-Okla.), the bill's chief sponsor in the House, says it will not permit agencies to withhold any information currently made public.

"This legislation is strictly a procedures bill," he remarked during House floor consideration on September 22. "It only modifies the procedures used by agencies in making disclosure decisions."

The bill was strongly supported by Chemical Specialties Manufacturers Association, which says the revised measure provides companies with "fair and certain" protection and corrects "serious procedural ambiguities" in the original statute.

Under these new procedures, when an outside interest makes an FOIA request for information which has been designated as confidential by the business which submitted the information, the agency must notify the submitter to allow the business to object to disclosure.

An agency would be given five days to notify the submitter that an FOIA request has been made, and the submitter would be allowed up to 10 days to file objections. The agency then has 10 days to determine whether to comply with the request.

If an objection to disclosure has been made, the agency must wait 10 additional days before releasing the information. Under specified circumstances, these time limits would be shortened if a requester asks for expedited consideration.

The agency would not have to notify the submitter regarding a FOIA request if the information was not designated as confidential, if the agency first determines that the request should be denied; if disclosure is required by law or regulation; if the information is already public; or if the agency determines that the information is not confidential, despite its designation.

The measure permits submitters to file so-called "reverse" lawsuits under the FOIA which seek to prevent an agency from releasing submitted information (previously such

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Toxic Waste Reduction Posited by US Agency

The amount of toxic waste generated by US industry could be reduced by one-third or more through the use of special processing techniques, according to Environmental Protection Agency.

In a report to Congress on the minimization of hazardous waste, EPA also said it would develop the first national data base on hazardous waste reduction techniques and that it would also provide technical assistance to help companies achieve waste reductions.

"Industry has significant potential to reduce public health and environmental risks by minimizing its hazardous waste production," said J. Winston Porter, EPA assistant administrator for solid waste and emergency response.

"Such reductions also could reduce disposal costs and the nation's need for treatment and disposal facilities. As a result, EPA will encourage industry to find ways to reduce both the volume and the toxicity of its waste, and we will work closely with the states to help foster waste reduction technologies," he said.

EPA said a survey of 22 industrial processes concluded that if existing techniques and new waste-reduction technologies are fully implemented, hazardous waste could be reduced by at least one-third.

Modifying production processes and improving internal management practices account for most of the hazardous waste reduction occurring today, said EPA. Only four percent of the total hazardous waste generated in 1981 was recycled, the agency found, leaving a significant recycling potential untapped.

EPA also found that, up to now, hazardous waste reduction has generally been the result of industry's efforts to decrease manufacturing costs, improve product yields, and comply with existing environmental regulations, rather than overall attempts to reduce waste production.

However, new incentives now exist for industry to reduce hazardous waste. Among them, Federal and state hazardous waste regulations, which have significantly increased the cost of disposal.

For example, land disposal of a ton of hazardous waste today averages around $250, whereas disposal of that waste before the regulations were implemented averaged around $15. Incineration today costs even more, from $500 to $1500 a ton.

The more costly treatment technologies,

Continued on Page 24

NPK Consumption Hurt by Farm Program

US Department of Agriculture's October 24 announcement of a paid land diversion (PLD) program for feed grains has reconfirmed analyst forecasts for 1986-1987 fertilizer year NPK consumption.

USDA announced in late September that the 20 percent acreage reduction program (ARP) in effect last year would be continued. In this program farmers who idle 20 percent of their viable land are entitled to participate in government price programs.

The PLD comes on top of the ARP and gives participating farmers the option to idle up to 15 percent more of their crop acreage next Spring in return for $2 per bushel on grain that normally would have been grown on that acreage.

The Fertilizer Institute, while disagreeing with government farm policy in general, feels that the plan is not as bad as it could have been, given prevailing sentiments. TFI says that talk had circulated at USDA of a PLD as high as 30 percent, owing to enormous political pressure and record grain stocks. Also, TFI notes that the announcement is being made early enough in the year to allow the fertilizer industry time to plan accordingly.

Analysts, though, were generally not suprised by the announcement, having anticipated a PLD between 10 and 20 percent. Harry Baumes, at Cbasa Econometrics, Bala Cynwyd, Pa., points out, however, that the $2 per bushel payment is fairly high and is likely to encourage farmer participation above the historical 85 percent level.

This year's planted acreage for corn, the most fertilized grain, is pegged at 78.8 million acres by USDA. Mr. Baumes expects planted corn acreage next year to drop to between 67 and 70 million acres, depending on actual participation levels. During the last significant acreage reduction plan, 1983's payment-in-kind (PIK) program, about 80 million acres of corn were planted.

Mr. Baumes feels that corn stocks at the end of the 1986 marketing year (next August) will be at an all time high, between 5.2 and 5.5 billion bushels. He says that the PLD program will bring this down by August 1988, but not below 4 million bushels.

The devastating PIK program was precipitated by then-record corn inventories of 3.5 billion bushels. The feeling among analysts is that some kind of PLD program will continue for at least another year beyond this one.

Taking the PLD into account, Ken Nyhri, an analyst with Texasgulf, expects total NPK consumption to decline between 5 and 6 percent in the 1986-1987 fertilizer year. Specifically, he sees a nutrient tonnage consumption drop from 4.4 to 4.1 million tons for P_2O_5, from 5.3 to 5.0 million tons for K_2O, and from 11.0 to 10.4 for N. Mr. Baumes is somewhat less optomistic, and sees an average NPK consumption decline closer to 7 or 8 percent as compared to the previous fertilizer year.

Either way, the NPK consumpton drop is not expected to be as severe as the PLD might imply. This is partly because farmers are expected to idle less productive, and consequently less fertilized, land, and partly be-

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FERTILIZER CONSUMPTION: Federal farm programs are cutting into demand for fertilizers.

Carbide's Kennedy Sees Wave Of Transnational Partnerships

Transnational partnerships that share marketing, research and production are the wave of the future, or so says Robert D. Kennedy, president and chief executive officer of Union Carbide Corporation. Speaking last week before the American Chamber of Commerce in Tokyo, Japan, Mr. Kennedy said joint ventures are "changing the way multinationals operate in an integrated worldwide market place." The Carbide president added that such partnerships are necessary in a world economy characterized by slow growth.

"The rapid pace of technological change and the enormous costs of developing, manufacturing and distributing new, advanced products in a global market virtually require transnational cooperations," he said.

Citing examples of such cooperation, Mr. Kennedy pointed to partnerships involving Toyota and General Motors, AT&T and Olivetti, and Nissan and Alfa Romeo and Volkswagen.

He predicted that the next big trend could be transnational corporate alliances investing in growth opportunities in developing nations. "That's a way to expand our markets instead of fighting for larger shares in the slow-growth industrial world," he said.

Turning to the chemical industry, the Carbide executive noted that Japan's chemical firms are facing the same type of problems US companies have been grappling with, including overcapacity, weak pricing, import competition, currency woes, declining sales and lagging exports. He went on to note that the Japanese are responding to these problems in the same way US firms

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Biologics Exemptions Allowed by USDA

Department of Agriculture has set up new procedures whereby veterinary biologics manufacturers who sell their products for export, or for use within the state where they are produced, may apply for temporary exemptions from Federal licensing standards governing the products.

Last year, amendments were made to the Virus-Serum-Toxin Act requiring veterinary biologics sold intrastate or for export to meet the same USDA licensing standards for safety, purity, potency and effectiveness that apply to veterinary biologics sold interstate.

Before the amendments, veterinary biologics sold intrastate or for export were not subject to Federal licensing requirements. The amendments allowed a four-year exemption period, and in some cases an additional 12-month extension, to give manufacturers time to bring intrastate and exported products up to Federal standards.

An exemption would allow a manufacturer to sell the exempted product for export or within the state where it is produced until Jan. 1, 1990. Until that date, an exempted product would not be subject to Federal licensing provisions.

To claim a four-year exemption for an intrastate or exported veterinary biologic, manufacturers must file a product licensing application form (APHIS form VS14-3) for the product by Jan. 1, 1967.

Gasohol Victim Of 'Gas' Slump

A report from the Department of Agriculture indicates that US gasohol production might be the latest victim of lower gasoline prices.

The report says the cost of producing gasohol is more than three times the cost of the current wholesale price of gasoline. Gasohol is nine parts gasoline and one part ethyl alcohol, a derivative of corn.

Of the dozen ethyl alcohol plants that receive USDA loan guarantees, nine are bankrupt or in liquidation, prompting the USDA to argue against further subsidies for gasohol production.

However, the National Corn Growers Association rejects the conclusions of the USDA report. "What they are forgetting is that we could have oil prices that would make gasohol competitive in the near future," says an NCGA official.

Du Pont Slates Plant For 'Kalrez' Parts

E. I. du Pont de Nemours & Co. plans to construct a manufacturing plant to produce perfluoroelastomer parts in Utsunomiya, Japan. The new plant will enable the company to meet an expected 20 percent annual increase in demand for "Kalrez" parts in the Japanese market.

The plant, scheduled for completion at the end of this year, will be the first "Kalrez" facility outside the US.

"This expansion is a key element in Du Pont's commitment to supply our customers with high-performance 'Kalrez' parts in worldwide markets," says Ernest E. Woodacre, director-engineered parts. "Producing 'Kalrez' parts in Japan, where they have been sold since 1979, will significantly increase our ability to offer products that meet local requirements, provide technical services, and ensure local quality control and a steady supply."

"Kalrez" perfluoroelastomer parts have greater chemical resistance and thermal stability than any other elastomer. They are used as fluid seals in the chemical, semiconductor, chemical transportation, oil manufacturing and aircraft industries.

Currently manufactured in Newark, Del., "Kalrez" parts are available through authorized Du Pont distributors.

Dioxin Burn Test To Use Small Unit

The final small-scale burn of dioxin-contaminated soil by a commercial mobile incinerator using infrared technology at a superfund site will take place at the Tibbetts Road site in Barrington, N.H., according to Environmental Protection Agency.

It is expected to take two weeks, at a cost of $150,000 in emergency funds. Residual ash of the four cubic yards of contaminated soil will be tested to determine dioxin destruction.

The mobile incinerator, owned by Shirco Infrared Systems, Inc. has been tested in Missouri and issued a research permit by EPA.

Additional emergency funding of $700,000 was authorized for a permanent waterline hookup for the 26 families whose wells have been contaminated at the New Hampshire site.

Drug Tampering Draws Jail Sentence

A Federal court in Orlando, Fla., last week sentenced Edward Marks to 27 years in prison for criminal tampering with consumer products. He was found guilty of putting rat poison in "Contac" and other nonprescription medicines made by SmithKline Beckman Company.

The Proprietary Association, an industry trade group, credited a new Federal anti-tampering law. "Effective law enforcement, including jail for offenders, is the key to deterring tampering," the association said in a statement last week.

Westlake Expands

Westlake Plastics Company of Lenni, Pa., says it has increased its capacity to produce high temperature and high strength thermoplastics. Westlake's line of materials includes polysulfone, polyethersulfone, polyetheretherketone and polyetherimide in a range of rod, film and slab sizes and in custom sizes of tube and profiles.

James W. Montgomery Jr. has been appointed director of operations of the Widger Chemical Corporation, a unit of BASF/Inmont. He had been Manufacturing Manager for the unit since 1981.

PVC Plant on Way For Canadian Oxy

Construction of a new $13-million PVC compounding plant by Canadian Occidental Petroleum Ltd. is under way in Tottenham, Ont., a community located about 25 miles Northwest of Toronto.

Scheduled for completion in early 1967, the 70,000-square-foot facility is designed to produce PVC rigid and semi-rigid sheeting and film as well as PVC compound products for North American and European Markets. The complex will include a research and development center, and will use computerized manufacturing techniques.

"Presently, steelwork is up, concrete is being poured, and siding is being applied," says a company spokesman. "We expect to be in commercial production by early 1987."

The plant will have two self-contained mixing systems. The compounding operation will produce compound in the form of pellets or dry blend for the PVC bottle market, including FDA-approved compounds for food and drug packaging.

Other compounds will be targeted towards pipe fittings, electrical conduit, and various PVC profiles such as windows, patio furniture, window blinds and furniture trim.

A second system will turn out rigid and semi-rigid PVC sheeting for packaging such as blister packs used for food, pharmaceuticals, medical devices and hardware products.

Chemicals, Textiles Cited for Safety

The American chemical and textile industries are the top two in safety among 42 industries ranked by the National Safety Council.

The textile industry for 1965 reported only 0.46 days away from work and deaths per 100 employees. The chemical industry was second with a rating of 0.52. The average of all industries was 1.96 days from work and deaths per 100 employees.

Ethyl Ibuprofen Will Be Expanded

Ethyl Corporation, the only major U.S. manufacturer of the active ingredient in ibuprofen pain-relievers, says it has begun a significant expansion of its Orangeburg, S.C., plant.

The move will increase Ethyl's total capacity for the ibuprofen active ingredient to well over 2 million kilograms per year by mid-1967 to meet growing demand for the product. The plant is capable of further expansion as necessary to meet future requirements for ibuprofen.

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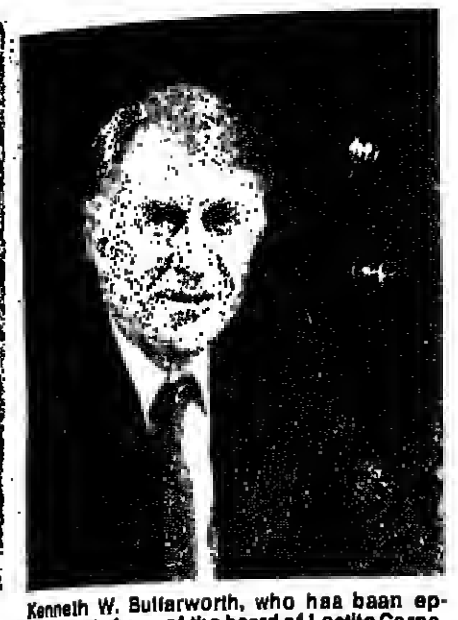

Kenneth W. Butterworth, who has been appointed chairman of the board of Loctite Corporation, succeeding Robert H. Krieble, co-founder of the company. Mr. Butterworth will continue to act as president and chief executive officer of the firm.

Drug Makers Target Japan As Big Outlet

Commerce Department statistics indicate that Japan was the US pharmaceutical industry's largest export market last year, purchasing nearly 22 percent of all US drug exports, totalling $581.1 million.

Japan was the top purchaser in all types of drugs—biologicals, medicinals and botanicals as well as finished pharmaceutical preparations, according to Commerce.

West Germany was the American industry's second largest customer, with $216.5 million in purchases.

The largest source of drugs for the US was the United Kingdom. The UK exported $366.2 million worth of pharmaceuticals to the US, accounting for nearly one-fifth of all US drug imports.

West Germany was the second largest supplier, providing $210 million, or 10.6 percent of US imports.

Commerce reports that the UK provided more than one-third of all finished pharmaceutical preparations imported by the US, and more than 18 percent of America's imported active ingredients.

Sweden was the leading supplier of biologicals to the US, shipping more than one-third of the total $162.7 million imports of these products.

Cyanide Law Drawing Praise From OTC Firms

A trade group representing manufacturers of non-prescription medicines last week called a new law to study the sale and distribution of poison cyanide "the most positive congressional action to prevent harm from product tampering since the Federal Anti-Tampering Act of 1983."

The cyanide provision orders Environmental Protection Agency to determine the feasibility of tighter registration requirements, recordkeeping, limited-access storage and distinctive coloring for cyanide.

The new law also asks EPA to study and report within six months to Congress on present sources of cyanide and distribution and sales methods.

"This legislation may not be the final answer, but assuredly it is a start toward closer control of cyanide manufacture and distribution," says James D. Cope, president of the Proprietary Association.

President Reagan enacted the cyanide provision by signing into law the AntiDrug Abuse Act of 1966.

ABS Rebounds; Prices Seen Holding Despite Higher Costs

Demand for ABS (acrylonitrile butadiene styrene) resin has rebounded after a particularly weak summer. Producers note that Summer is usually a slow season for this market, with refrigerator and automobile manufacturing plants shut down for one to three week vacations. August demand was low even by ordinary standards, and domestic sales fell 2 percent from the previous year-to-date levels.

Producers blame this on customer inventory drawdowns. September came in strong, they say, citing preliminary SPI figures for the month which show sales up 9 percent over August's low and production up 13 percent. Based on October sales, the domestic market will definitely see growth of 2 to 3 percent, and possibly 4 percent this year, they say, bringing the US total to between 1.05 and 1.1 billion pounds.

Despite 4-to-6-cent-per-pound increases in the cost of styrene monomer, which accounts for 55 to 60 percent of the total end product, producers report that March and April 2-to-3-cent-per-pound TVA's are still in effect. These price cuts were essentially pass-throughs of lower styrene monomer costs, which fell from 31 cents per pound in January to 16 cents per pound in April. Currently, monomer is selling for 22 cents per pound to 24 cents per pound, and additional increases, prompted by firming crude values, have been announced for November.

One producer explains that styrene increases have been more than offset by lower acrylonitrile and butadiene costs.

Prices for acrylonitrile, which accounts for about 30 percent of the total end-product, fell 3 cents per pound through August, and are continuing to fall, while prices for butadiene have plunged 14 cents per pound, from 26 cents per pound in February.

Styrene costs remain the primary concern. Although producers would like to raise ABS prices, they say higher prices would be impossible to effect now, given an intensely competitive domestic market. Customers would reject increases, one producer explains, because ABS did not immediately fol-

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Lonza Charged on TSCA

Environmental Protection Agency enforcement officials have issued a civil complaint with an assessed penalty of $1.46 million against Lonza, Inc. of Long Beach, Calif., for failure to submit completed studies, as required by the Toxic Substances Control Act (TSCA).

The action is the first civil complaint filed against a firm for a violation of TSCA section 8, which requires submission to EPA of health and safety studies of any chemical substance deemed potentially toxic.

This applies to studies by manufacturers, processors or distributors of the chemicals, even when there are negative results.

The studies in question were in the form of aggregated air monitoring data evaluated for worker safety exposure and were to be made known to EPA in 1982. The agency says the failure to report these studies became known during a routine inspection in September 1965.

EPA cannot release the name of the chemical substance or details of the studies because the company declared them confidential business information under section 14 of TSCA.

In another TSCA case, EPA has proposed penalties of $125,550 against Envirosafe Services of Idaho, Inc. for allegedly violating the act in the handling of PCB wastes at a Grand View, Idaho facility.

The complaints include improper burial, spills, removal, tank repairs and storage. Two previous PCB violations were resolved in 1983 and 1984 with the company agreeing to pay fines totalling $47,750.

Patent Protection Bill Aids Canadian Drug Firms

Legislation to extend patent protection for brand name drugs in Canada is expected to be introduced by the Canadian government within a matter of weeks, according to government and industry spokesmen.

Introduction of the bill has been delayed for a variety of reasons, but the measure is expected to pass through Parliament essentially intact.

The bill would blunt the effects of Canada's compulsory licensing law, which requires brand name firms to license their patents to generic firms for a royalty fee. Generics currently account for about 10 percent of Canada's prescription drug market.

Pharmaceutical Manufacturers Association of Canada, an industry trade group representing brand name firms, lost its bid to obtain repeal of compulsory licensing, but the patent protection legislation provides the next best thing. Half of PMAC's members are subsidiaries of US drug firms.

Under the bill, brand name firms would be granted up to 10 years of market exclusivity for their products before being required to license generic copies. This "nets out to the same thing" as repeal of compulsory licensing, PMAC observes, because the early years of a drug's 17-year patent life are lost during the regulatory approval process.

In return for market exclusivity, brand name firms have agreed to boost research and development spending in Canada and keep future price increases within the bounds of Canada's consumer price index. Companies could lose patent protection for their products if price increases exceed the CPI.

Compulsory licensing was implemented in Canada in 1969 as a way of combating high drug prices, and has been strongly supported by consumer groups, but brand name manufacturers have argued that the program has stifled investment in pharmaceutical research and development.

After a series of delays, the government sent its patent protection measure to Parliament on June 27, but in a foul-up, for which there is apparently no official explanation, the courier from the governor general arrived at the House of Commons after Parliament had already recessed for the Summer.

The bill was then to be introduced in September, when Parliament was originally scheduled to reconvene, but instead, a new session of Parliament opened in October.

Parliamentary formalities, including the Queen's speech, further delayed the start of legislative business. "A whole lot of ducks had to get lined up," a government spokesman observes last week. He said, however, that Harvie Andre, Minister of Consumer and Corporate Affairs, is expected to introduce the patent protection measure within a matter of weeks.

Drug Makers Pledge More On Research

The International Federation of Pharmaceutical Manufacturers Associations (IFPMA) concluded its 13th Assembly with a pledge by its new president, Warner-Lambert Company chairman and chief executive officer Joseph D. Williams, that the industry will continue its research effort as a means to improving health care for people throughout the world.

"The industry recognizes that its quest to develop new and better medicines is never-ending," said Mr. Williams. He observed that the privately owned research-based pharmaceutical industry has developed "nearly all the new medicines that have helped to prolong life and improve its quality in the last 50 years. This program would not have been achieved in the absence of an economic system that fosters competition," he added.

Mr. Williams succeeds Peter W. Cunliffe, principal executive officer of ICI's International pharmaceutical business.

Mr. Cunliffe told delegates that the industry is "increasingly being challenged" by critics and that it must find ways to ensure that the complexity of its operations is fully understood.

"The discovery and development of new medicines is not inevitable," he said. "It depends on scientific brilliance, unique teamwork and a very great deal of money. To approach questions on the use of medicines with oversimplification that some 250 drugs are all that are needed is as irrational as it is potentially damaging for future invention and the health and welfare of the people of the world."

Dr. Richard B. Arnold, IFPMA executive vice-president, outlined the industry's commitment: "A continuing search for new, better medicines; meeting the highest standards of safety, quality and efficacy; providing accurate relevant information to support the

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Air Products Cogeneration Is Under Way

Air Products & Chemicals Inc. has begun construction of a 49-megawatt coal-fired cogeneration plant at Stockton, Calif. The facility will provide steam and electricity to CPC International Inc. and electricity to Pacific Gas & Chemical Company under 20-year contracts.

The $100-million plant will be built on a site adjoining CPC's corn wet milling plant. CPC will obtain all of its electric power from the facility, and PG&E will purchase the balance of the output.

The plant is scheduled to be completed in the second quarter of 1966 and will incorporate a circulating fluidized bed boiler which will be supplied by Pyropower Corporation of San Diego, Calif.

The cogeneration plant will mean "significantly lower energy costs for the Corn Products plant here, and will greatly strengthen its ability to compete with corn wet milling plants located in other parts of the country where energy costs are lower," according to Fred C. Meendsen, president of CPC's Corn Products unit.

With the addition of the facility at Stockton, all three of CPC's US plants will be served by cogeneration plants.

Air Products says the plant is representative of the cogeneration opportunities it is seeking on behalf of industrial customers who need low-cost and assured electrical power supply. The company recently formed a marketing joint venture with Pyropower for developing and operating industrial cogeneration facilities.

Detergents in Europe

Consumption growth rates of 10 to 15 percent annually for some specialty surfactants and non-phosphate detergent builders can be expected as consumer product formulations change in many West European countries.

This rapid growth in consumption of raw materials for detergents, fabric softeners and personal care products is forecast in a study just completed by Colin A. Houston & Associates, Mamaroneck, N.Y.

Overall consumption of surfactants will continue to grow to 1995 from its present level of 1.4 million metric tons worth $1.7 billion.

According to the Houston study, a complex set of economic, political and competitive pressures are resulting from environmental concerns.

Consumer product companies are completely revamping the image of their products as well as introducing major reformulations.

Concern over phosphate's role in eutrophication has led to voluntary and legislated reductions in STPP consumption and rapid growth in the use of non-phosphate builder systems in detergents.

Concern over biodegradation has led to voluntary and legislated reductions in alkylphenol ethoxylate consumption in household products and growth in alcohol ethoxylate consumption.

In personal care products, substantial increases in use frequency of shampoos and shower products is causing very strong demand for mild surfactants.

Product trends and growth rates vary widely among the 13 countries and 16 end uses studied.

Superfund Suit Alleges Rules Are Too Generous

The National Wildlife Federation has filed suit against the Department of the Interior, alleging that regulations written for the superfund hazardous waste law will allow polluters to escape paying appropriate damages when they injure fish, wildlife, and other natural resources.

Interior's regulations, released in August, determine how much money state and federal agencies can collect from either polluters or the Superfund for injuries to fish, wildlife, and other natural resources caused by toxic leaks and spills. Every year, according to government data, there are about 10,000 reported leaks of toxic substances into the nation's environment.

Calling Interior's regulations "the stepchild of the superfund program," NWF executive vice-president Jay D. Hair said, "Interior has failed in its duty to protect and restore our nation's natural resources. Conservationists had to sue the department to issue the long-overdue rules. Now it's clear that Interior hopes to minimize the amount of money available to restore damaged resources, from national parks to endangered wildlife."

Both the Environmental Defense Fund and the Public Citizen Litigation Group joined NWF in the suit, which takes the form of a petition for review in the US Court of Appeals in Washington, D.C. The suit will challenge the rules in several areas, alleging that they:

- Fail to require that sufficient funds will be available to restore or replace natural resources damaged by toxic leaks or spills, or to acquire equivalent resources where restoration or replacement is impossible.
- Illegally bar state officials from obtaining a "rebuttal presumption" of the correctness of their damage assessments when a polluter challenges the state's conclusions.
- Unlawfully allow the polluters to perform the entire assessment of the money they owe for damage to natural resources than they themselves cause.
- Unlawfully require that the "market value" of resources, including national parks, wilderness areas, and endangered species, will measure damages, rather than the actual value of the resources to the public.
- Arbitrarily deny environmentalists and citizens the same rights to participate in decision making that are given polluters.
- Unlawfully suggest that damage to natural resources suffered by individual members of the public is not compensable under the rules.

The Federation noted that the suit was significantly strengthened by the 1986 superfund amendments signed into law on October 17. Congress severely criticized the natural resource damage rules in enacting the new amendments, and Congress specifically reversed some provisions of the rules.

Grace Retail Outlets Sold To Management Investors

W.R. Grace & Co. has completed the sale of its Home Quarters Warehouse business for more than $10 million to a management investor group led by Bernard R. Koasar, senior vice-president of Grace's retail group.

Grace will retain a 25 percent interest in the retail business, which serves the do-it-yourself and professional markets, with outlets in Virginia Beach and Hampton Bays, Va., Columbia, S.C. and Tallahassee, Fla.

Financing for the sale was provided by Citicorp Industrial Credit Inc.

The transaction is part of a corporate restructuring program initiated by Grace last December which includes the company's departure from retailing.

Grace sold its interest in Herman's World of Sporting Goods in April for $227 million and its Home Centers West unit in June for approximately $185 million. Last month, the company reached an agreement to sell its J.B. Robinson Jewelers business for approximately $55 million.

Also in October, the company reduced its corporate staff in New York City and sold its Dearborn Engineering Group. Grace plans to sell the rest of its retail group, as well as its interest in Taco Villa, its fast food operation, and complete a leveraged buyout of its restaurant group.

The restructuring and cost-cutting moves were prompted by the repurchase by Grace of 20 percent of the company's stock from the Flick Group of West Germany.

Grace has been considered vulnerable to a takeover attempt ever since Flick sold its 26 percent holding. Speculation about a possible takeover attempt has focused largely on Samuel Heyman, chairman of GAF Corporation, who launched an unsuccessful, but profitable, bid for Union Carbide Corporation after his winning proxy fight to gain control of GAF.

Fiat Affiliate Buys Into Clinical Sciences

Bioengineering International BV, an affiliate of Italy's worldwide Fiat automotive group, has purchased 4 million shares of Clinical Sciences, Inc., a manufacturer of medical diagnostics and serological reagents based in Whippany, N.J., for $2 million. This represent 52.8 percent of the American company's stock.

Ozone Depletion Now Blamed on Sun

New satellite data suggests that the sun, not chlorofluorocarbons, may be responsible for the potentially dangerous depletion of the atmospheric ozone layer above the South Pole, says a study published Thursday.

According to the analysis by the National Aeronautics and Space Administration, an intense peak of solar activity that ended in late 1979 and early 1980 produced a number of complex chemical reactions that led to a global decline in atmospheric ozone levels and a major depletion over Antartica.

Because the sun's activity has now subsided, the ozone may be returning to its normal state, says Linwood B. Callis, an author of the NASA study.

Mr. Callis says he has found satellite data suggesting a climb in ozone levels this year, lagging by several years behind the decline in the intense solar activity.

If the solar theory of ozone destruction proves to be correct he says, "This will be the first indication that a solar cycle can have such a major effect on the atmosphere."

Just one week earlier, a US research team in Antartica said they had found strong evidence against theories that high solar activity or wind currents were the cause of the phenomenon.

But other US scientists questioned whether those hypotheses could be ruled out on the basis of the preliminary data collected by the National Oceanic & Atmospheric Administration expedition.

Ozone, an ionized form of oxygen found in the upper atmosphere, shields the earth from some of the sun's harmful ultraviolate radia-

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Sam F. Segnar, formerly chairman and chief executive of HNG/Internorth Inc. (now Enron) who hee been nemed cheirman of Vista, replecing Gordon A. Cain, of the Sterling Group.

Fertilizer Retailer Study Finds Dry Operations Cheaper

Results of a major new study on the costs of operating a retail fertilizer business reveal that dry-only operations incur $48.66 per ton, fluid-only plants experience costs of $65.57 per ton and operations dealing in both liquid and dry products have costs of $55.99 per ton, on average.

These findings were part of a first-ever analysis of retail business costs, funded by the Fertilizer Institute and conducted by the Tennessee Valley Authority's National Fertilizer Development Center.

The just-released information reports costs per ton for various functions within the retail operation, but does not include the expenses incurred for raw material purchases or in-bound transportation freight. A summary of the report's findings will appear in an upcoming issue of "Fertilizer Progress," a bimonthly publication of the Institute.

Of the firms studied, liquid-only and combined (liquid and dry) operations have a higher average investment requirement per ton of business, reflecting a broader range of services. Investment costs — the amount required for a new entrant to buy and operate a firm — are $57.30 per ton for dry, $73.25 for liquid and $86.80 for combined operations.

In all firms, expenses for salaries and depreciation represent approximately half of all costs. On the basis of cost by function, expenses associated with fertilizer application services are dominant across all firm types, posting $22.41 for dry-only, $26.85 for liquid and $27.57 for both.

These and other findings are the product of on-site interviews and analysis of confidential expense data from 46 retail fertilizer dealerships — 23 handling liquid, 12 handling dry and 11 handling both product types. In each case, firms had sales approaching or exceeding 10,000 tons of fertilizer annually. The Tennessee Valley Authority will publish a comprehensive analysis in early 1987.

Drug Bill Pressed by Coalition As Administration Voices Fear

A coalition of lawmakers, drug company executives and health-care professionals called on President Reagan last week to sign legislation designed to compensate children injured by vaccines and promote exports of prescription drugs.

The omnibus health package, a bill which addresses nine major US health issues, was passed shortly before Congress adjourned.

But despite unanimous congressional approval and full support of the health research and pharmaceutical communities, Reagan Administration officials are split over whether the package should be vetoed due to the section that creates a vaccine-injury compensation fund.

Commerce Secretary Malcolm Baldridge, US Trade Representative Clayton Yeutter and Health & Human Services Secretary Otis Bowen are urging President Reagan to sign the package because it would allow drug and biotechnology companies to export US-manufactured products not yet approved for use here to Japan and 20 European nations that have licensed the drugs for sale within their borders.

Sen. Orrin Hatch (R-Utah), told a news conference that without this change in US export law, American firms will move plants overseas, costing the US "thousands of jobs and hundreds of millions of dollars in exports."

He also noted that the bill's drug export provisions "make it the only non-protectionist trade legislation passed during this session of Congress."

Richard D. Godown, president of the Industrial Biotechnology Association, said a presidential veto could cause the US to lose its world leadership in the field of biotechnology.

"This change in the law will do more to maintain US leadership in biotechnology than any other action I can think of, and it's not a trade restriction," Mr. Godown said.

"It will halt the loss of leading edge technology in this field and it will keep jobs and capital investment at home. At a time when Japan has made it a top priority to take over

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News Capsule

Monsanto Signs Accord

Monsanto Enviro-Chem Systems Inc. has signed an agreement with Edmeston AB to use a new stainless steel in the acid systems of its sulfuric acid plants. The steel will replace cast iron pipe, heavy brick-lined steel vessels and other materials currently in place, Monsanto says.

Grace Unit Invests

Grace Ventures Corporation, the venture capital subsidiary of W.R. Grace & Co., has invested $500,000 in Vitaphore Corporation, a San Carlos, Calif., developer, manufacturer and marketing of proprietary medical devices used to prevent, diagnose and treat infections associated with invasive and surgical procedures and wound management. The investment is part of a $6.25 million venture capital financing.

Dow Unit In Shift

CD Medical Inc., a wholly-owned subsidiary of Merrell Dow, has become an operating unit of Dow Chemical Company. CD Medical, formerly Cordis Dow, manufactures membranes and artificial kidneys as well as medical equipment. CD Medical management now reports to Enrique J. Sosa, commercial vice-president for specialties, who is responsible for all of Dow's membrane-related businesses.

Alcan Contract Ratified

Members of Local 142 of the Aluminum, Brick & Glass Workers Union, which represents 450 employees at Alcan Ingot & Recycling's Sebree, Ky., smelter, have ratified a new three-year contract, ending a 143-day strike. Alcan did not disclose the terms of the contract but described it as "concessionary."

Rohm & Haas Service

Rohm and Haas Company has introduced a new water treatment program, which includes a group of managers who provide research, marketing and sales information to water treatment chemical formulators. The company says it can now respond more quickly to questions and problems concerning the use of polymers in boiler and cooling water treatment.

NL Industries Has Loss

NL Industries Inc., New York, had a third-quarter net loss of 27.9 million on sales of continuing and discontinued operations of $308.2 million. In the third quarter a year ago, the company had net income of $5 million on sales of $360.4 million. Because of continued weakness in domestic drilling activity and associated pricing pressure, the company's petroleum service business recorded an operating loss of $31.4 million.

Blair Recommends

William Blair & Co., of Chicago, is recommending the shares of National Sanitary Supply Company, distributor of a wide range of sanitary maintenance products to a broad customer base in the Southwestern US. Although a small company, it is among the largest in a big, growing but fragmented industry, commented Thomas S. Postek, industry analyst.

Amoco Declares Dividend

Amoco Corporation's directors have declared a regular quarterly cash dividend of 82.5 cents per share on the common stock, payable December 10 to holders on November 5. Amoco (formerly called Standard Oil Company of Indiana) has paid regular quarterly dividends for 78 years.

Retchhold Forms

The Chemical Coatings Division of Reichhold Chemicals, Inc. in Pensacola, Fla., has formed a new business unit — General Coatings Products, with Clifford Q. Schneider as vice-president and general manager. The unit will "further tap the potential within existing markets for our products lines," stated James J. Compass, president of Reichhold's Chemical Coatings Division.

Charles S. Locke

Morton Thiokol Sees Earnings Gain in 1987

Despite the reduction in aerospace earnings due to the Space Shuttle failure in February, Morton Thiokol, Inc., expects its earnings in fiscal 1987 to at least match the $2.80 per share earned in fiscal 1986, ended June 30, and possibly reach $3.00 per share, Charles S. Locke, chairman and chief executive officer, told a luncheon meeting of the New York Society of Security Analysts last week.

If $2.80 is topped in 1987, it will mark the thirteenth consecutive year of earnings growth for the Chicago based producer of salt, specialty chemicals and aerospace products and services.

Mr. Locke told the analysts that Morton Thiokol's return on stockholders' equity is hovering just a shade below the company's high goal of a 20 percent return. The last recorded figure was 18.9 percent.

Long-term debt of Morton Thiokol has been gradually reduced from 35 percent in 1976, to only 4 percent now, about the lowest of any company in an industry in which the average has usually been in the 30-to-40-percent range.

This low debt represents a huge borrowing power which could be used for rapid expansion or a major acquisition.

When asked by an analyst about the possibility of "leveraging up," Mr. Locke indi-

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Monsanto Eyes Sale of Assets To Indiana Firm

Monsanto Company is negotiating with Ball Corporation of Muncie, Ind., for the sale of its assets associated with Monsanto's plastic container business.

The container business, which makes and sells plastic bottles, has approximately 1,500 employees at nine locations in the US. If the negotiations result in the sale of the business, substantially all of the employees would be expected to be retained.

Earl N. Braafield, group vice-president of Monsanto, says, "Our container business is profitable but no longer fits into our business strategy.

"The reason we have entered these negotiations is because our container business appears to be of greater value and strategic importance to Ball Corporation," Mr. Brasfield adds. "We hope these negotiations will result in a definitive agreement within the next month."

The container business has administrative and support personnel at Monsanto's headquarters in St. Louis plus a technical center in Bloomfield, Conn., and manufacturing plants in St. Louis, Ligonier, Ind., Sharonville, Ohio, Anaheim, Calif., Kenilworth, N.J., and Deep River and Stonington, Conn.

Carbide's Income Up On Divestment Gains

Union Carbide Corporation had third-quarter net income of $290 million, reflecting a gain of $252 million from disposal of businessea, mostly the sale of the home and automotive products business.

This compares to a net loss in the comparable 1985 period of $543 million, which included special charges of $820 million from the corporation's restructuring program.

On a comparable operating business, including continuing and discontinued businessea, income in the latest quarter amounted to $38 million, as compared with $58 million in the 1985 period. Operating profit from continuing operations in the recent quarter was $188 million, a 57 percent increase from $120 million a year ago.

Operating profit of Union Carbide's Chemicals & Plastics business in the third quarter rose to $210 million from $32 million a year, while profit in industrial gases edged up to $70 million from $65 million and carbon product earninga increased to $9 million from $4 million. Lossea were recorded in specialties and aervices.

In other earnings reports, A. H. Robins Company, diversified health care concern based in Richmond, Va., reported that its operating earnings in the quarter rose 31 percent to $50,529,000, while net earnings were down 8 percent to $24,959,000. The net earnings comparison was distorted by an extraordinary gain in the 1985 quarter.

E. Claiborne Robins, Jr., president and chief executive officer, said the principal contributors to 1986 growth in sales and operating earninga were generic injectables produced by the company's Elkins-Sinn subsidiary; non-prescription formulas of "Dimetapp," a cold and allergy product; "Micro-Extencaps," a prescription potassium chloride supplement; and the "Robitussin" family of cough preparations.

In Princeton, N.J., Squibb Corporation said its net income per share increased 15 percent from a year ago to $1.55 in the third quarter, despite a charge to earnings of 22 cents per share, reflecting inventory adjustments and a restructuring of the medical systems business.

In line with previously announced decisions, these businesses — Westmark International, Inc., and Charles of the Ritz Group, Ltd. — are being reported as "businesses to be disposed of."

Richard M. Furlaud, chairman and chief executive officer, said that plans to distribute Westmark as a tax-free dividend to shareholders and to sell Charles of The Ritz

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Borg-Warner To Sell Unit

Borg-Warner Corporation said last week that it plans to sell its Industrial Products subsidiary by the end of this year as part of a corporate-wide restructuring program.

"Industrial Products is a good business long-term and a very well-managed company, but it does not fit with our plan to become a more focused company," said Clarence E. Johnson, Borg-Warner's president and chief executive officer.

Borg-Warner obtained Industrial Products in 1955 as part of its acquisition of Byron Jackson Pump. Industrial Products produces mechanical seals, aerospace actuators and large centrifugal pumps.

Based in Long Beach, Calif., Industrial Products recorded an operating profit of $12.9 million for the first six months of this year, representing about 7 percent of Borg-Warner's total operating profit for the period of $182.9 million. Sales of $139.2 million represented about 8 percent of Borg-Warner's total sales of $1.8 billion in the first half of the year.

In September, Borg-Warner's board authorized the repurchase of up to 15 million of the company's shares on the open market and through private purchases. At that time, the company said funds for the stock buyback program would come mainly from the restructuring program. Borg-Warner, along with many others, is rumored to be a possible takeover target of GAF Corporation.

"We are continuing to examine our businesses and have identified others, in addition to Industrial Products, which will be sold," Mr. Johnson said last week.

The company said its plans for the sale of Industrial Products envisions continuity of current management, strategies, programs and products to assure no disruption of service to the group's customers and minimal impact on Industrial Products' employees.

Vulcan's Chemical Business Hurt by Imports, Soft Prices

Of Vulcan Materials Company's three lines of business, construction materials, the biggest and the most profitable has set the pace through the first nine months, and will continue to do so through the current quarter and into 1987, officials told a luncheon meeting of the New York Society of Security Analysts last week.

Vulcan's chemical business, consisting of chlorine-caustic soda, chlorinated solvents, pentachlorophenol and various other commodities, is reaping the benefits of a new cogeneration facility at Geismar, La., but this is still outweighed by negatives in the chemical marketing picture.

The main problem continues to be high levels of imports despite the vastly improved conversion rate on the dollar, although this is being partly offset by an increase in US exports of chlorinated solvents as the lower value of the dollar is reflected in reduced prices of US-produced solvents when converted into local currencies, officials said.

Herbert A. Sklenar, president and chief executive officer, said that chemical shipments and earnings in the 1 parcant quarter will exceed the deeply depressed results of the same period a year ago, but that sales and earnings for the full year will fall below the 1985 totals.

Charles E. Sturgeon, president of the Chemical Division, reported that the company's conversion of its chlor-alkali plant at Fort Edward, Wisc., from production of caustic soda to caustic potash is moving along on schedule and should be completed later this month toward start-up at the first of the year.

Newly instituted price increases in caustic soda are partly holding, and a methylene chloride price increase has been fully accepted, with the possibility of another being posted early in 1987, Mr. Sturgeon said.

During the first even months, chlorinated solvent imports continued to rise at a 17 percent rate over 1985 volume, but exports increased by 70 percent, he noted.

Lee K. Bailey, executive vice-president of construction materials, noted that all six of the company's construction divisions operate autonomously with their own presidents. Sales and earnings will continue to grow rapidly despite the failure to pass a highway construction funding bill and estimates that US housing construction in 1987 will fall to about 1.4 million to 1.5 million starts from

Continued on Page 66.

OILS, FATS & WAXES

Peanut Oil Price Strengthens; Poor Availability Outlook Cited

Peanut oil producers are expecting far less oil to be available this year as compared to previous years, and current pricing is reflecting that expectation. The harvest is also very late at this point, further aggravating the short supply situation and helping to push prices up.

According to US Department of Agriculture estimates, this year's peanut crop will be reduced by more than 16 percent compared to the 1985 crop. The projected size of this year's crop is 1.68 million tons, compared to last year's figure of 2.06 million tons, according to USDA.

"There'll be much less oil available this year," says an industry source, who anticipates steadier market conditions because of it. At the moment, little crushing stock is available, sources say, as only a little more than half of the crop has been harvested.

Thus far only a small proportion of oil-grade segregation three peanuts has shown up in the harvest, meaning that the oil industry will have to compete in the market with food-grade peanut buyers. It is cautioned, however, that not until all of the harvest has been completed can accurate assessments be made regarding the quality and grade of the peanuts.

LATE HARVEST

Exacerbating the short supply of peanuts is the lateness of the harvest. "Normally we're finished at this time," says a source, "but as it is we only have a little more than half the crop in." Late planting, drought conditions during the Summer, and a rainy harvest season are the primary causes of the delay.

In late September, oil consumers became confident that oil would be readily available when they wanted it. Their slack buying brought the price down to levels as low as 25½ cents per pound. As the crop outlook worsened in recent weeks, the price has come up appreciably.

At this point buyers are not very active in the market, sources say. The trading that has been going on of late has been by consumers rather than dealers. "Dealers have not been major players," says an industry source, who notes that buying is average, for "just normal everyday use."

It is considered unlikely that prices will ease down any time this year. Some sources believe that some of the larger producers may try to ration their supply, releasing only a little at a time. "We won't see any big flood of oil at any one time," says a source, simply because of the short supplies.

In any case, dealers are expecting a steadier market this year than in previous years. "Chances of seeing the price come down this year are slim," says another industry source, who believes that the price may come up more in the next week or two before the harvest is finished.

VEGETABLE OILS

CORN OIL — Availability of this oil is currently very tight, as reflected in the high price levels in the market. The tightness of supply is largely due to the heavy volume of export sales made several weeks ago, which dealers will continue to be covering in November and December.

Demand has been slack as many consumers are unwilling to support the market at these levels. "Corn oil has been firming for a while, but it's getting a little bit extreme," says an industry source. It is believed that customers who can wait until early next year will stay out of the market for the time being.

After the first of the year the corn grind is expected to increase, bringing more oil to the market. Also, slow demand is predicted for much of December, which should serve to ease prices down, a source says. In the meantime, very tight supply conditions and strong pricing are expected to persist through the month of November.

SAFFLOWERSEED OIL — The price of this oil is currently quoted at 55c. per pound for crude material in tanks, New York. For edible material in drums, delivered, New York, the price is quoted at 75c. to 76c. per pound.

The industry is still trying to evaluate the extent of the crop damage caused by wet weather in Montana earlier in the season. In addition to crop damage, there have been some quality problems as well, according to an industry source, who says that overly matured seeds have been yielding oil that is undesirably dark.

There is said to be a general reluctance on the part of sellers to offer very much material to the market. The reluctance comes as the result of uncertainty over just how severe the Montana crop damage has been. "We're in a wait and see mode," says a source, who notes that crop yields in California were generally good.

SUNFLOWERSEED OIL — The price of this oil has come up to currently quoted levels of 16c. to 16½c. per pound for crude material, f.o.b. Minneapolis. With the increase in

PRICES TRENDLINES

WEEK ENDING OCT. 31, 1986

CHANGES/UP

Corn oil, Midwest, 1c. per lb.
Cottonseed, 41% bulk, Memphis, $10 per ton
Cottonseed oil, Valley, 1c. per lb.
Grease, white, choice, tanks, dlvd., NY, ¼c. per lb.
Palm oil, NY, ¼c. per lb.
Peanut oil, Southeast (restricted), ½c. per lb.
Soybean, 44% bulk, Decatur, $2 per ton
Soybean oil, Decatur, ½c. per lb.

CHANGES/DOWN

Coconut oil, NY, 1c. per lb.
Lard, loose, bulk tanks, Chicago dlvd., 2c. per lb.

OILS, FATS INDEX

The Oils, Fats & Waxes index reflects the prices of 11 representative materials in this sector and the quantity of each produced in 1985.

Oct. 31, 1986	81.94
Oct. 24, 1986	80.49
Oct. 3, 1986	79.85
Nov. 1, 1985	86.49

Chemical Prices Start on Page 48

FRIDAY SPOT PRICES

MARKET CLOSE OCT. 31, 1986

CRUDE VEGETABLE OILS		
Coconut oil, NY	lb.	.20
Coconut oil, Pacific	lb.	NA
Corn oil, Midwest	lb.	.20½
Cottonseed oil, Valley	lb.	.17
Linseed oil, Minneapolis	lb.	.25
Palm oil, NY	lb.	.15½
Peanut oil, Southeast (restricted)	lb.	.30½
Soybean oil, Decatur	lb.	.15
REFD, VEGETABLE OILS		
Coconut oil, t.w., NY	lb.	.24¼
Corn, jumbo tanks	lb.	.2885
Cottonseed oil, jumbo tanks, NY	lb.	.26½
Peanut oil, jumbo tanks, NY	lb.	.3985
Soybean salad oil, NY	lb.	.1995
OILMEALS		
Cottonseed, 14% bulk, Memphis	ton	$150
Linseed, extracted, 34% bulk, Fargo	ton	$105
Peanut, 50% bulk, SE, Alabama	ton	$155
Soybean, unrest., 44% bulk, Decatur	ton	$153
FATS & GREASES		
Grease, white, choice, tanks, dlvd., NY	lb.	.10½
Grease, yellow maximum 10%, ffe tanks	lb.	.9
Lard, loose, bulk tanks, dlvd., Chicago	lb.	.15
Tallow, inedible, fancy, tanks, dlvd., NY	lb.	.12¼
Yellow, inedible, btch., tanks, dlvd., NY	lb.	.12

OILS, FATS & WAXES

pricing on most vegetable oils in the world market, foreign buyers have become more interested in US sun oil, according to an industry source.

Supplies of the oil are described as good, with new crop seeds slowly coming in. About half of the crop is in at this point. "Sun seeds have been moving out of the field, but we wish there was more movement," says an industry source, who notes that progress in the harvest haa been lagging.

FATTY ACIDS

TALL OIL — Production of tall oil fatty acid (TOFA) was down in September compared to August's output, according to Pulp Chemicals Association figurea.

Production of fatty acids of 2 percent and over rosin content in September was 15.9 million pounds, down 17.7 percent from August's output of 19.3 million pounds.

For material containing less than 2 percent rosin TOFA, production in September was 18.3 million pounds, off by 12.0 percent from August's level of 18.8 million pounds.

FISH OIL

MENHADEN OIL — Following stronger pricing for palm oil, the price of crude menhaden oil has also come up. In tanks at the Atlantic Coast it is 12c. per pound, works, and at the Gulf it is priced at 13c. per pound, same basis. Producers are confident that prices will hold at these higher levels or move higher, particularly if palm oil production for October is off, as is expected.

US menhaden oil is selling well in Europe, particularly due to a lack of competition from other countries. The Japanese, who are continuing to have good fishing, are selling heavily on their own domestic market, according to an industry source. What exporting they are doing is said to be largely to Southeast Asia. This, in addition to the lack of offers from Chile, is making for good US sales to Europe.

Demand in the US has risen in the past couple of weeks, says a source, who cites interest in fish oil-derived omega 3 fatty acid capsules, said to be effective in fighting cholesterol, as a primary reason. Another source indicates that he has been meeting requests for menhaden oil from researchers studying omega 3 fatty acids. This rise in demand, plus the tightness of supplies, should help keep pricing at its current levels, sources say.

MISCELLANEOUS

COCOA BUTTER — The spot price of cocoa butter has come down to $2.14 per pound. The decline in price is attributed to weaker pricing on cocoa beans, and to a lack of demand for the butter. With these factors continuing to affect the market, the price may come down another few cents in the near future, according to an industry source.

Reagan Mulls Waste Measure

Citing overwhelming public support for clean water, the Water Pollution Control Federation has urged President Reagan to sign a $20 billion Clean Water reauthorization bill.

WPCF President Carl V. Huber noted in a letter to Reagan that "in a recent Los Angeles public opinion survey, 88 percent of those polled placed the need for adequate pollution controls above economic concerns." Huber said the overwhelming congressional support for the bill is a direct result of the deep-rooted public support for the Clean Water Act and its goal of "fishable, swimmable" waters.

President Reagan has not said if he will sign the bill. Since Congress adjourned last week, he may choose to kill the measure with a "pocket veto." Whenever Congress is adjourned, if the President chooses not to sign a bill within 10 days of receiving it, the bill dies.

The WPCF letter says that the bill's achievements in bringing about regulatory reform and ending the federal wastewater construction grants program should outweigh the administration's concerns about overall spending levels.

The bill has a total price tag of nearly 18 billion dollars through 1994, much more than Reagan wanted. However, direct grants for wastewater treatment would end after 1990.

Federal assistance after 1990 would be in the form of matching grants to establish state water pollution control revolving funds. These funds would provide a self-supporting mechanism to finance future wastewater construction. The Huber letter notes that in 1981, WPCF "was the first national clean water organization to publicly call for an orderly phase-out of the construction grants program."

Mr. Huber closed by telling President Reagan that approval of the nine-year reauthorization would "be seen as one of your administration's most lasting accomplishments in the environmental protection field."

Petrochemicals Seen Profitable Over Five Years

The petrochemical and polymer industries will see little change in capacity in the US over the next five years and should experience a trend toward increased profits, Houston consultant John Doerr told the Society of Plastics Industries (SPI) Southwest Fall conference, October 25th in Austin, Tex.

Mr. Doerr, who is the chairman of Internation PC, predicts that fewer companies will be involved in the manufacture of petrochemicals and polymers. More integration, both upstream and downstream, will result in a decrease in open market sales.

Addressing ethylene specifically, Mr. Doerr says the capacity in place and operating today is insufficient to support major growth in any major ethylene consuming segment, and those companies depending on purchased ethylene must consider becoming more closely affiliated with ethylene supply.

Mr. Doerr's production forecasts through 1990 are more conservative than most: 1.5 percent for ethylene, 3 percent for total polyethylene, and 4 percent for polypropylene. Domestic markets for polymers will grow more rapidly than production, and supply will have to come from lowered exports.

Mr. Doerr points out that the profits from operation of steamcrackers have, since the mid to late '70's, been "nothing less than miserable." With fewer ethylene plants in operation and an increasing percentage that can use refinery feedstocks, more ethylene facilities are now owned and operated by oil companies.

Add the fact that the captive market for ethylene is much larger than the merchant market, and you will likely see producers shying away from making ethylene for sale. They will favor operations that are captively owned or controlled where they can add value to their own ethylene.

According to Mr. Doerr, "The ball is in the court of petroleum refiners. They have the raw materials, they have the feedstocks, they have the basic capacity to supply polymers and other downstream chemical enterprises, and they desperately need to improve profits."

Union Carbide Hikes

Continued from Page 9

are progressing on schedule. The good operating earnings of Squibb, he adds, reflect the continuing strong performance of the company's pharmaceutical business.

Mr. Furlaud noted that the growth in this segment continued to be led by cardiovascular products, where sales increased 54 percent to $178.2 million in the quarter.

Stepan Company, Northfield, Ill., a producer of surfactants and specialty and commodity chemicals, expects to report record earnings for all of 1986, surpassing the previous high of 1961, stated F. Quinn Stepan, chairman and president.

Stepan's net earnings in the third quarter rose 26 percent to $1,856,000 from $1,478,000 a year ago, and sales increased to $64,584,000 from $61,713,000.

Polymer sales volume increased 40 percent, due primarily to the company's new phthalic anhydride-based polyols and phthalic anhydride itself, Mr. Quinn commented. Surfactant sales volumes also rose, but total sales dollars were down due to lower raw material costs, he stated.

In Dallas, Tex., American Petrofina, Incorporated, said it had third-quarter net earnings of $5,663,000, as compared with $10,757,000 last year. The latest figure includes pre-tax income of about $25 million resulting from a settlement agreement with Department of Energy in August.

Kenneth W. Perry, president and CEO, said the company is "proud of our petrochemicals and plastics segment, which produced outstanding results for the quarter." Increased sales volumes and good margins allowed these plants to operate at capacity during the quarter, Mr. Perry stated.

"We have every reason to believe these results will continue throughout the fourth quarter and into 1987," he added.

Later last week, Imperial Chemical Industries PLC, of London, reported that its earnings for the third quarter were $223 million, a solid advance from $151 million a year ago. Sir John Harvey-Jones, ICI's board chairman, cited a progressive recovery of profit margins in most of ICI's businesses as a benefit of the oil price reductions, plus unusually strong demand in what is normally a slack quarter.

Drug Makers See

Continued from Page 5

use of products; recognizing that products should be cost-effective and that special measures may be necessary to accommodate the restricted ability of poorer countries to decide what to buy and to pay for it; and, finally, a determination by industry to impose on itself and to monitor high ethical standards of marketing behavior."

Founded in 1966, the IFPMA now comprises 51 pharmaceutical manufacturers' associations representing over 80 percent of the world's pharmaceutical production and an annual research investment of more than $6 billion. The US Pharmaceutical Manufacturers Association is a founder-member of the IFPMA.

AROMATIC ORGANICS

Cyclohexane Price Hike Driven By Housing Mart

Cyclohexane producers say their contract price level for November 1 will at least reflect 2c. per gallon of the upward benzene contract adjustment. This raises the price for Phillips Chemical Company and others by 1.65c. per gallon, up to $1.0090 per gallon. Some producers may be as much as 1c. per gallon lower than this level.

Phillips led an October 1 removal of 1c. per gallon off the industry's temporary voluntary allowance (TVA) that was first granted last year. Producers say this move has been successful, and, as a result, 3 cents have been eliminated this year from the 4 cents per gallon than constituted the TVA initially.

Producers attribute their ability to raise pricing to strong demand and plant closures that have pushed up operating rates in the industry.

Gulf Canada shut its 30-million-gallon-per-year facility last December, and it has been said that 17 million gallons of US exports will end up having been created this year by that shutdown. There has been some talk in recent months that the plant might reopen under new management, but these rumors have quieted down recently, says a producer.

E.I. du Pont de Nemours & Co.'s 50-million-gallon-per-year Corpus Christi, Tex., plant has been shut since August, and is not expected to reopen until early next year. The company is working on routing hydrogen for the plant from a nearby facility in Victoria, Tex. Some producers remain skeptical about the feasibility of Du Pont's plans, and say the plant may not reopen at all.

SWING PLANT

Philipps idled its 90-million-gallon-per-year swing plant in Sweeney, Tex., this May, but says it will likely restart the facility in late November.

A producer says that, even though all the facilities that are in operation are running well, the market is fairly tight because of the plants that are down.

Cyclohexane production during the first half of the year was 1.112 million pound, as compared with .669 million pounds during the first half of 1985. Producers attribute part of the pickup this year to a drawdown of inventory levels in 1985.

Demand has picked up this year in the major end market of carpeting as a result of strong housing start levels and also a high level of housing resales, producers note. Although housing starts get most of the attention, comments one producer, the replacement carpeting market has been more important this year.

"The replacement market was stagnant last year," notes a producer, who lays part of the reason for the pickup this year to a wearing out of the carpeting from the last housing boom in 1976-'79.

BTX — Benzene producers are raising contract price levels by 2c. to 5c. per gallon November 1 from the October level of 85c. per gallon.

According to an industry trader, Shell Chemical Company initially moved to 90c. per gallon, and was followed by Standard Oil Company. However, Exxon Chemical Americas announced a price of 87c. per gallon, and Shell then reacted by moving to the same level. Standard Oil remained at 90c. per gallon.

Producers had been at the 85c. per gallon level for one-and-a-half to two months, one of the longest stable periods this year. Contract adjustments reflect strength in the benzene spot market, which was quoted last week between 85c. and 87c. per gallon, up from the previous week's 83c. to 84c. per gallon level.

Industry players attribute much of benzene's firmness to strong derivatives demand, most notably styrene. "Derivatives are doing very well...(and) pulled benzene contracts up psychologically," says one source.

A trader observes that the upward trend has been running counter to crude oil pricing, which has been weak. "Oil looks a little shaky, on rumors that Saudi Arabia and Mexico have been discounting to pick up volumes," he comments. "Most product prices are off; aromatics are standing alone," observes another trader early last week.

However, later in the week, the removal of Sheik Yamani from his position as Saudi Arabian oil minister was seen as providing some support for oil pricing.

The US futures market for hydrocarbons rose by the maximum permissable amount last Thursday following the Saudi announcement. Although it is too early to tell the long-term effects of Yamani's departure on oil values, and, hence, BTX pricing, a trader comments that "Yamani's policy had been to maintain market share by driving the price down."

The toluene market did not share benzene's strength last week. Spot pricing was quoted between 85c. and 87c. per gallon as compared with the previous week's price of 87c. per gallon.

"There is lackluster demand for toluene," observed one trader, and another attributes toluene's failure to follow benzene to soft gasoline pricing.

With the spread between benzene and toluene widening, Chevron Chemical Company said it was considering starting up its hydrodealkylation unit. However, a trader says that he does not believe Chevron "can see the sustained daylight" to justify a move.

The spot xylene market did firm up last week to between 78c. and 80c. per gallon, from the 76c. to 77c. per gallon level of the previous week. "There are no barrels around," says an industry source.

AROMATIC SOLVENTS — Amoco Chemicals Company has announced prices for a line of "Panasol" solvents that are effective November 1.

The price for "Panasol AN-2L" is $1.25 per gallon, the price for "Panasol AN-2X" is $1.10 per gallon, and the price for "Panasol AN-3N" is $1.05 per gallon. All prices are

PRICES TRENDLINES

WEEK ENDING OCT. 31, 1986

CHANGES/UP
None

CHANGES/DOWN
None

AROMATICS INDEX

The Aromatic Organics index reflects the prices of 14 representative materials in this sector and the quantity of each produced in 1985.

Oct. 31, 1986	167.84
Oct. 24, 1986	167.84
Oct. 3, 1986	167.84
Nov. 1, 1985	167.84

Chemical Prices Start on Page 48

PRICE HIGHLIGHTS

AROMATICS IN OCTOBER

	CONTRACT (US $)	SPOT (US$)
Aniline ..... lb.	.33-35½	.24-.28
Benzene ..... gal.	.85	.81-.84
Cumene ..... lb.	.14½-.14¾	.14⅛-.14¼
Cyclohexane .... gal.	.99¼-.99½	N.A.
Phenol ..... lb.	.20-.22	.19-.20
Styrene ..... lb.	.21-.23	.20-.21
Toluene ..... gal.	.87-.73	.85-.87
Xylenes, mixed .. gal.	.80	.76-.77

AROMATICS

f.o.b. Texas City, Tex., in tank cars and truck transports.

NAPHTHENIC ACID — Producers of refined naphthenic acid say they are encouraged by an evolving end use for the material in copper naphthenate as a fungicide in wood treatment.

Copper naphthenate's approval this year by a wood preservative association comes on the heels of government environmental action against pentachlorophenol, formerly the leader in this market, producers say.

Producers see strong growth in the wood treatment area compensating somewhat for weak demand this year from the oil field sector. With drilling down due to inexpensive oil imports, naphthenic acid's use as a corrosion inhibitor has been off significantly, says a producer.

There is some concern among producers over a potential decline in end market cobalt naphthenate's use in the radial tire industry. One producer says that, beginning next year, there are plans for some reformulation away from cobalt naphthenate by major tire companies.

Other applications for naphthenic acid are said to be more stable. These include paint and ink driers and lubricating oils. One producer points out that paint and ink drying applications are not interchangeable with other materials, but that uses in emulsifiers, lubricants, and oils can be switched.

For crude naphthenic acid, pricing is quoted by one supplier in the mid-30-cents-per-pound range, and by another in a range of 35c. per pound for 150 acid grade to 43c. per pound for 210 acid grade.

One producer, Hewchem, says it is raising its crude pricing January 1 on 185 acid grade by 3c. per pound, to 34c. per pound from 31c. per pound. 190 acid grade will move up 6c. per pound, to 38c. per pound from 32c. per pound. At this date, no change is scheduled for 150 acid grade, which is posted at 30c. per pound. A rival producer says his current prices are very close to the level Hewchem is moving to January 1.

Refined naphthenic acid is quoted at 78c. per pound for 200 acid grade in bulk for the East Coast market. A West Coast producer quotes a price of 85c. per pound for 200 acid grade. It is said that this material is primarily exported. Producers say that, in general, pricing has been fairly stable the past several months.

Producers of refined naphthenic acid say the market is tighter this year than last, and attribute much of this to Exxon's pulling out of the refined market in 1985 by shutting its South American facility.

One producer notes that "there was some jostling around and overbuying" when Exxon moved out of the refined business, and others say the market was "in a panic" briefly, but has been stable in recent months.

Crude suppliers say the market is rather tight on a worldwide basis, and one attributes this to a decline in the export activity of Romania. "There are some spot shortfalls and imbalances," he says.

Trade Secret Safety

Continued from Page 3

suits could only be brought under the Administrative Procedures Act).

In cases where a submitter has filed such a lawsuit, the bill gives preference to the requester in the choice of which district court the case will be argued. If the requester has a competing commercial interest, however, the requester receives no special preference and the appropriate court is determined by standard legal procedures.

Finally, the new law requires that when courts review administrative decisions in cases brought by either requesters or submitters, the court will not be bound by the facts as found by the Federal agency involved (so-called "de novo" consideration), and provides that the submitter pay the legal costs of a requester if the court finds that the submitter's reasons for seeking to withhold the information were not justified.

Calcium Lactate OK'd

Effective Nov. 28, Department of Agriculture will allow calcium lactate to be used as a flavor enhancer in some sausages and meat sticks. Calcium lactate is generally recognized as safe as a food additive by Food and Drug Administration, and is already approved by USDA for use as a binder in some meat products, according to Donald L. Houston, administrator of USDA's Food Safety and Inspection Service.

Acid Rain Study Picked by DOE Meet Standards

Nine clean coal technology projects selected last Summer by the Department of Energy will accomplish many, if not all, of the objectives identified earlier this year by special US and Canadian envoys on acid rain.

That is the conclusion of an analysis sent to Congress by the Energy Department.

The analysis compares the environmental and economic benefits of the nine projects with the major recommendations for a clean coal demonstration program presented in January 1986 by Drew Lewis, special envoy to President Reagan, and William Davis, special envoy to Canadian Prime Minister Brian Mulroney.

The department selected the projects in accordance with a Congressional directive to fund a broad slate of emerging coal technologies that would apply to a variety of commercial markets and use a wide cross-section of US coals.

By contrast, the Lewis-Davis report called for a program focusing on new technologies that could be added to existing utility power plants to economically control emissions from high-sulfur coal burning.

Nevertheless, the Energy Department concluded after a nine-month analysis that three of the nine selected demonstration projects conformed to all of the Lewis-Davis guidelines, while two more would meet the recommendations when deployed on a commercial scale. The remaining projects were found to meet at least half of the Lewis-Davis guidelines.

The department placed major emphasis on the following four distinct facets of the Lewis-Davis guidelines in reaching its conclusions:

- That the selected projects have the potential for the largest sulfur dioxide and nitrogen oxide emission reductions — both at the demonstration sites and in the future commercial applications.
- That funding be authorized for those projects that reduce emissions at the least cost per ton.
- That more consideration be given to projects that demonstrate retrofit technologies designed to cut down on transboundary air pollution.
- That special emphasis be given to technologies that apply to facilities currently dependent on the use of high-sulfur coal.

In comparing the nine selected projects to these recommendations, the department concluded that the pressurized fluidized bed combustion project proposed by American Electric Power Service Corp., the limestone injection multistage burner/sorbent injection concepts to be demonstrated by Babcock & Wilcox and the use of a natural gas "reburning" and sorbent injection technology proposed by Energy & Environmental Research met all of the Lewis-Davis guidelines.

Two other projects — an advanced cyclone combustor demonstration proposed by Coal Tech Corp. and a coal gasification integrated combined cycle plant proposed by the M.W. Kellogg Company — met all the criteria with the exception of reducing emissions during the demonstration phase. However, the department concluded that commercial use of these concepts would produce fewer emissions than the conventional technologies they would replace.

In general, the report found, the selected projects applicable to new, "grass roots" facilities could reduce sulfur dioxide emissions by 15 to 96 percent and nitrogen oxide emissions from 19 to 67 percent over current Federal New Source Performance Standards for utilities.

Those technologies which could be retrofitted to existing facilities could reduce sulfur dioxide emissions by 50 to more than 99 percent and nitrogen oxide emissions by 50 to 60 percent compared to an uncontrolled high-sulfur coal-burning power plant.

In other comparisons, the Energy Department concluded that eight of the nine selected technologies could be applied to utilities — the only one not applicable is the advanced ironmaking demonstration plant proposed by Weirton Steel Corp. — and that five could be used as retrofit technologies on existing plants. All nine showed the potential for economic improvements over comparable existing technologies, and all but one could use high sulfur coal.

ALIPHATIC ORGANICS

Propylene Price Hike Fails; Acrylonitrile Pressure Cited

Propylene prices failed to register real gains in October, cutting short a small September rally that producers hoped to sustain into the fourth quarter.

Prices firmed a fraction in September, and producers tried to follow this with a 2 cent per pound increase last month. After a promising beginning, many sources now say that prices for the month showed little or no gain over September.

The hoped for October price increases were designed to reflect the firming price of crude oil and many petrochemicals. Since oil partly reversed its slide in August though, propylene prices had increased only one-half cent a pound or less. Producers hoped to recapture lost margins in October by posting 2 cent per pound price increases.

Early in the month, the price initiative appeared promising. One producer says some early contracts were settled at 10 cents per pound for chemical grade, up one-half cent from September's contract price. However, toward the latter part of the month, the firming trend lost its momentum and contracts slipped back to 9½ cents by month's end. Spot prices, though, were able to firm a fraction in October, moving from 9 cents to 9⅛ cents per pound in the month for chemical grade material.

OVERSUPPLY CITED

Sources attribute the failed price initiative to several factors. One is simple oversupply. Even though demand for propylene has increased in nearly every major end use this year, supply has been ample all year. Falling crude values made it very attractive to crack heavy feedstocks at ethylene plants and so propylene production from steam crackers has been high to 1986.

Also, the push to improve octane ratings has pushed oil refiners to run their catalytic crackers at high severity, thus increasing the supply of refinery grade propylene. Consequently, while demand is up considerably in 1986, there has been a supply overhang for the C3 material nearly all year.

Another major reason cited for low prices has been tremendous downward price pressure exerted by acrylonitrile producers. Faced with extreme competition in the export market, US acrylo producers have watched their export prices fall from over $700 to $500 per metric ton in the past ten months. Given this long, sharp slide in prices, acrylo makers have resisted higher raw material propylene costs. Since, as one observer notes, over 100 million pounds of propylene per month is consumed in making acrylonitrile for the export market, the acryln producers have been able to exert strong pressure to keep chemical grade propylene prices down.

Aside from acrylonitrile though, this has been something of a banner year for propylene consumption. Producers point out that demand for polypropylene has been outstanding, and that consumption of propylene oxide, cumene, isopropanol, and oxo-alcohols have all exceeded expectations.

The growing market for exports has also given a big boost to propylene makers, both by sopping up extra domestic supplies, and adding a little firmness to the pricing structure. Along with a growing structural tightening in propylene supplies, European supplies grew very tight beginning in late August due to maintenance turnarounds at several European ethylene crackers. As a result US export demand has soared. Several sources estimate that orders for over 60 million pounds of US propylene were placed by European consumers in the past two months. A fire in the Houston Ship Channel in mid-October has held up over 20 million pounds of exports until early November, but the size of this export demand has given the US propylene business a lift.

Polymer grade propylene moving to Europe is fetching a higher price than that sold in the domestic market. While the US contract price for polymer grade propylene stands at 10½ cents per pound or less, Hugh Pylant of Pace Consultants, Houston, says producers are now asking 11 cents per pound for export sales.

Jock Doerr of International PC, Inc., Houston, notes that tightening supplies of propylene in Europe has driven the price there up from 480 Deutschmarks per metric ton for third quarter contracts to a current spot price of 570 Deutschmarks per metric ton. To US suppliers, this is an increase from 11 cents per pound delivered to port to 13 cents per pound.

Several turnarounds at US cat crackers have tightened the domestic refinery propylene pool, but analysts contend that total domestic propylene supplies will remain high through the end of the year. Hugh Pylant projects that the feedstock slate in olefin units will assure high propylene output. Ethane, he says, should remain unchanged with about 40 percent of the feedstock total. Propane, however, is in extremely long supply and is expected to increase its share from 19 percent in September to 25 percent in December. At the same time, gas oil will decline in use as the approach of Winter drives up heating oil #2 prices. Mr. Pylant projects that gas oil will fall from 23 percent of total feedstocks to 16 percent by the end of the year. Naptha will increase slightly from 16 to 20 percent.

While chemical and polymer grade propylene prices stagnate, the cutback in production at refineries have driven up the spot price of refinery propylene. Since early September, refinery grade propylene prices have risen from 7 cents per pound to the current 8 cents to 8½ cents per pound range. However, by closing the differential between refinery material and chemical grade propylene, many refiners have realized greater value by putting the propylene in the dimersol and alkylation pools.

ACETATE FIBERS — Celanese Textile Fibers says it will boost prices for all compacted acetate fillment yarns by 5c. per

Continued on Page 21

PRICES TRENDLINES

WEEK ENDING OCT. 31, 1986

CHANGES/UP
None

CHANGES/DOWN
None

ALIPHATICS INDEX

The Aliphatic Organics index reflects the prices of 20 representative materials in this sector and the quantity of each produced in 1985.

Oct. 31, 1986	222.80
Oct. 24, 1986	222.80
Oct. 3, 1986	222.80
Nov. 1, 1985	222.80

Chemical Prices Start on Page 48

PRICE HIGHLIGHTS

ALIPHATICS IN OCTOBER

	OCT. (US $)	SEPT. (US $)
Butadiene, lb.	.10½	.11½
Ethylene, lb.	.14½	.14
Ethylene Glycol, lb.	.18½	.18½
Methanol, gal.	.27-.28	.29
Propylene, lb.	.8½	.9¾
Vinyl Chloride, lb.	.15½-.16	.15½

Chemical Finance

Epolin's Shares Go on OTC Market

Shares of Epolin Incorporated, located at 293 Wilson Avenue, Newark, N. J., are now available to the public on the over-the-counter market. Epolin (a cronym for "Expanding Polymers for Industry") is planning commercial production of products based on polymerization of a novel class of monomeric materials, including spiro-orthocarbonates and spiro-orthoesters which molecularly expand on polymerization rather than contract, as do most monomers the company says. The patent is owned by Prof. William J. Bailey, of the University of Maryland, and is exclusively assigned to Epolin.

de Zoete & Bevan Says ICI Is Undervalued

Selling at a discount of 19 percent to the market averages, the shares of Imperial Chemical Industries PLC are undervalued and investors should avail themselves of the opportunity to purchase them at current price levels, according to de Zoete & Bevan, of London, New York, Hong Kong and Tokyu. Analysts Howard Coates, Jinty Price and Robin Hindle Fisher note that ICI is feeling the benefits of lower feedstock prices, favorable currency movements and strong end-use demand. ICI's share price should be about 11 times earnings instead of 9 times earnings as at present, the analysts stated.

Goodrich Issuing $100 Million of Preferred

Directors of B. F. Goodrich Company, Akron, Ohio, have authorized the issuance of $100 million of convertible preferred stock. Goodrich expects to file a registration statement shortly with Securities & Exchange Commission for the issue, which will be offered only by means of a prospectus. The dividend rate and the convertible features will be determined later. Proceeds will be used to reduce debt and for other general corporate purposes, Goodrich stated.

Goodyear Restructures Under Threat of Acquisiton

Goodyear Tire & Rubber Company has retained the investment banking firms of Drexel Burnham Lambert, Inc., and Goldman Sachs & Co. to assist it in devising a restructuring plan that would maximize shareholder values. The move comes amid speculation that Sir James Goldsmith, an Anglo-French financier and corporate raider, will attempt to take over the company. According to published reports, Sir James owns somewhat more than 15 percent of Goodyear's outstanding common shares.

Syntex Extends Stock Repurchase Program

Directors of Syntex Corporation, a diversified health care company based in Palo Alto, Calif., have authorized an extension of the company's recent common stock repurchase program, which began in late June 1986. Directors authorized the purchase in the open market or through privately negotiated transactions of up to 2 million additional shares over an indefinite period of time. This extends a 4-million-share repurchase program which was begun June 20 and completed in mid-October. Acquired shares will be held in the company's treasury.

Squibb to Repurchase 1 Million Shares of Stock

Directors of Squibb Corporation have authorized the repurchase from time to time of up to 1 million shares of the company's outstanding common stock. The shares will be held in the treasury and will be used for the company's stock option plans and for other general corporate purposes.

Squibb's directors have also adopted a merger defense amendment, commonly called a "poison pill," consisting of stockholder rights that would be exercisable only under conditions indicative of a hostile takeover attempt.

Borden's Chemical Income Surges 68 Percent

Borden, Inc.'s worldwide chemical division recorded a 68 percent increase in operating income in the third quarter, with domestic operations gaining 84 percent and international operations 26 percent, reports Eugene J. Sullivan, chairman and chief executive officer. All four domestic groups had higher earnings, with the biggest gain posted by the group that markets polyvinyl chloride resins, Mr. Sullivan stated. A percentage gain of 2,600 percent in PVC resin income translated into a very substantial dollar gain, the CEO further commented.

Du Pont Increases Dividend by 5 Cents

Directors of E. I. du Pont de Nemours & Co. have increased the quarterly dividend on the common stock by 5 cents per share to 80 cents, payable December 13 to stockholders of record, November 14. The boost reflects the company's improved earnings, consistently strong cash flow and "commitment to improve shareholder return," stated Richard E. Heckert, Du Pont's board chairman. Also declared were regular quarterly dividends on preferred issues.

Chemical Waste Management Completes Offering

Chemical Waste Management, Inc., Oak Brook, Ill., has completed an offering of 13.8 million shares of common in an initial global public offering. Net proceeds of approximately $309 million will be used to pay a cash dividend to Waste Management Incorporated and repay certain indebtedness to Waste Management, which retains approximately 61 percent of the company's 99.9 million shares of common stock outstanding after the offering.

Solvay Boosts its Holding In Laporte

Solvay & Cie., of Belgium, has acquired an additional 1,172,783 ordinary shares of Laporte Industries PLC, the diveralfied titanium dioxide producer headquartered in England, thereby raising its total holding to 22 percent of Laporte's ordinary share capital (common stock). Solvay has stated its intention to raise the interest gradually to 25 percent. The two companies are joint holders of Interox, a worldwide producer of hydrogen peroxide.

Hutton Still Neutral on IMC's Stock

E. F. Hutton & Co. maintains a neutral rating near and long-term on the stock of International Minerals & Chemical Corporation, Skokie, Ill. John P. Henry, Hutton's chemical analyst, believes the agricultural environment will continue to depress the firm's earnings. Mr. Henry notes that operating earnings in fertilizers were down to $18.8 million in the first fiscal quarter ended September 30, which included a special gain of $7 million, as compared with earnings of $24 million in the same period a year ago.

ALIPHATICS

Continued from Page 19

pound, and hike weaving twisted yarns prices by 7c. per pound. The increases take effect January 7, 1987.

DIMETHYL SULFOXIDE — Atochem, Inc. says it has increased its dimethyl sulfoxide prices effective November 1, 1986. Atochem says the increases are the first in two years and attributes them to higher raw material freight costs.

The new schedule for DMSO in drums are: 94c. per pound for drum container quantities (32,410 pounds); 96c. for truckloads sizes (minimum 24,076 pounds); 97c. for quantities ranging from 9,260 pounds to 23,613 pounds; $1.00 per pound for orders varying from 2,315 to 6,797 pounds, and $1.05 per pound for orders ranging between 463 pounds and 1,652 pounds.

ETHYLENE GLYCOL — Produeers say an October 2c. per pound price initiative has been successful for industrial grode material, but not so for anti-freeze grade. Fiber grade produet was not included in the price announcements.

Dow Chemical reportedly led the initiative (CMR, 9/15/86, pg. 56) on both products, but then backed off on anti-freeze grade. Producers say the increase was also set back for most accounts to October 15, the effective date later announced by Union Carbide, the largest glycol produeer.

The anti-freeze increase is said to have failed because glycol produeers with consumer produet lines are not increasing retail anti-freeze prices. Most buying of anti-freeze product took place before October anyway, sources say.

There is some isolated resistance to the industrial grade increase, one observer says as PPG reportedly is waiting until November to increase prices to its accounts. Industrial accounts make up about 10 percent of the EG market.

Producers are now looking at industrial grade prices in the 18c.-to 19c.-per-pound range, f.o.b. Gulf production point. Anti-freeze grade remains at 16c. to 16½c. per pound.

Producers are also reporting that ethylene oxide buyers are also accepting at least most of the 2c.-per-pound increase that was also asked for in October. Not all accounts have been settled here, however.

PERCHLOROETHYLENE — Dow Chemical USA has announced a 2c. per pound increase in its line of perchloroethylene products, effective December 1.

The increase, which is not to exceed current list prices, affects "Dowper," "Dowper CS," perchloroethylene industrial and SVG and tetrachloroethylene USP grades.

A pere importer, who says he intends to support the price initiative, puts the current market price for industrial grade perchloroethylene between 16c. and 17c. per pound, f.o.b. tanks.

Vitamin Price Hikes Posted By Roche and Takeda USA

Hoffmann-La Roche Inc., one of the US's leading suppliers of vitamins, recently announced several price increases, all effective November 1. In addition, late last week Takeda USA also announced multiple price hikes. The increases involve an array of vitamins, including many B-vitamins, vitamin C and vitamin H.

Most vitamins have been firming throughout 1986, a sharp reversal from the previous three years, which were characterized by market depression. Roche's move, however, marked the greatest number of simultaneous price increases.

Some observers believe Roche's numerous increases symbolize the industrys' desire to match 1982 price levels. Prices are said to be rallying this year because of currency devaluation and increased demand.

The B-vitamin increases are: thiamine mononitrate USP, FCC and thiamine hydrochloride USP, FCC (both vitamin B_1), $33 per kilogram for 100 kilograms, $34.50 per kilogram for 50 kilograms, and $35.50 per kilogram for 20 kilograms. Fifty and 100-kilogram quantities for thiamine hydrochloride are in bulk containers. Riboflavin USP, FCC (vitamin B_2), is moving to $48.50 per kilogram for 100 kilograms and $50 per kilogram for 25 kilograms; 95 percent granulation of riboflavin USP will be $50 per kilogram for 100 kilograms and $51.50 per kilogram for 25 kilograms.

NEW SCHEDULES

Other B-vitamin increases are: niacin USP, FCC (nicotinic acid), $6.50 per kilogram for 5,000 kilograms, $6.75 per kilogram for 1,000 kilograms, $7 per kilogram for 250 kilograms, and $7.25 per kilogram for 50 kilograms; niacinamide USP and niacinamide free flowing granular, $6.50 per kilogram for 1,000 kilograms, $6.75 per kilogram for 400 kilograms and $7 per kilogram for 50 kilograms; d-calcium pantothenate USP, FCC (vitamin B_5) $12.50 per kilogram for 500 kilograms, $13 per kilogram for 100 kilograms and $13.50 per kilogram for 25 kilograms; pyridoxine hydrochloride USP, FCC (vitamin B_6), $36 per kilogram in bulk containers, $38 per kilogram for 20 kilograms.

BASF Wyandotte and EM Industries reportedly initiated many of these increases.

Other increases announced by Roche are: ascorbic acid (vitamin C) and sodium ascorbate, $11 per kilogram for 400 kilograms, $11.25 per kilogram for 100 kilograms and $11.50 per kilograms for 25 kilograms; calcium ascorbate, FCC, $14 per kilogram for 500 kilograms, $14.50 per kilogram for 100 kilograms and $15 per kilogram for 25 kilograms; coated ascorbic acid 97.5 percent, $11.45 per kilogram for 400 kilograms, $11.75 per kilogram for 100 kilograms and $12 per kilogram for 50 kilograms.

Niacinamide ascorbate, FCC, $10.?? per kilogram for 400 kilograms and $10.?? per kilogram for 50 kilograms; ascorbic acid ?? percent granulation, $10.30 per kilogram for 1,000 kilograms, $10.50 per kilogram for ?? kilograms and $10.75 per kilogram for ?? kilograms; ascorbic acid 95 percent granulation, $10.85 per kilogram for 1,000 kilograms, $11.05 per kilogram for 500 kilograms and $11.30 per kilogram for ?? kilograms; sodium ascorbate, meat grade, $4.90 per pound for 200 pounds and more and $5 per pound for less than 200 pounds. These prices are for product in bulk containers.

Roche is also raising its price for biotin FCC (vitamin H) to $5 per gram for ?? grams, $8 per gram for between 100 and ?? grams, and $8 per gram for less than ?? grams; 1 percent biotin trituration now ?? $55 per kilogram for 100 kilograms and $50.50 per kilogram for 50 kilograms.

A Roche spokesman says the company decided to examine its portfolio of vitamins in order to establish stable list pricing and, in turn, restore stability in the marketplace. He, along with other vitamin suppliers, says that pricing is still lower than it was in 19??.

PRICES TRENDLINES
WEEK ENDING OCT. 31, 1986

CHANGES/UP
None

CHANGES/DOWN
None

DRUGS INDEX
The Drugs & Fine Chemicals Index reflects the prices of 10 representative materials in this sector and the quantity of each produced in 1985.

Oct. 31, 1986	211.1?
Oct. 24, 1986	211.?
Oct. 3, 1986	211.?
Nov. 1, 1985	211.?

Chemical Prices Start on Page 46

DRUG & FINE CHEMICAL IMPORTS: AUGUST
CENSUS BUREAU REPORTS ON THE TOP DRUGS

		AUGUST		JULY	
		QUANTITY	$ VALUE	QUANTITY	$ VALUE
Acetaminophen	lbs.	428,431	1,000,448	362,774	[illegible]
Benzenoid drugs, n.s.p.l.	lbs.	108,073	1,595,983	214,854	[illegible]
Brucine	lbs.	—	—	78,000	[illegible]
Caffeine	oz.			384,947	[illegible]
Citric Acid	lb.	573,710	2,250,482	5,058,852	[illegible]
Cream of Tarter	lb.	3,878,940	2,442,417	182,811	[illegible]
d-pantothenic acid	lbs.	288,531	188,398	482,085	[illegible]
Iodine, crude	lbs.	198,070	748,782	143,486	[illegible]
Monosodium glutamate	lbs.	205,238	1,188,982	8,722,198	[illegible]
Niacin, pharmaceutical grade	lbs.	8,454,483	3,588,412	143,99	[illegible]
Penicillin G salts	lbs.	132,278	308,283	125,209	[illegible]
Penicillin n.s.p.l.	lbs.	185,088	1,333,598	8,752	[illegible]
Phenylephrine HCl	lbs.	10,999	735,028	—	—
Potassium sodium tartrate, (Rochelle Salts)	lbs.	2,205	137,088	40,000	[illegible]
Quinidine	lbs.	85,190	38,808	177,916	[illegible]
Quinine and its salts	oz.	589,998	1,872,895	71,420	[illegible]
Saccharin	oz.	248,974	874,559	80,274	[illegible]
Steroid hormones, synthetic	lbs.	178,784	346,172	2,889,988	[illegible]
Sulfamethazine	gms.	1,222,528	1,087,271	130,292	[illegible]
Sulfathiazole	lbs.	111,853	489,985	141,315	[illegible]
Tartaric acid	lbs.	83,730	177,887	547,070	[illegible]
Vitamin A	lbs.	841,658	656,983	421,998	[illegible]
Vitamin B_1	lbs.	249,988	1,987,887	83,690	[illegible]
Vitamin B_2	lbs.	78,423	978,153	118,300	[illegible]
Vitamin B_{12}	lbs.	188,958	2,582,318	95,332	[illegible]
Vitamin C	lbs.	4,654	219,090	1,424,913	[illegible]
Vitamin E	lbs.	1,187,473	4,229,391	466,795	[illegible]
Vitamins, provitamin, etc., n.s.p.f.	lbs.	220,881	1,250,288	133,338	[illegible]
Woolgrease, n.s.p.l.	lbs.	11,074	109,113	525,255	[illegible]
	lbs.	737,488	335,203		

Roche's price increases range from 5 to 10 percent.

Takeda USA also announced increases on several vitamins, all effective November 1. Thiamine mononitrate and thiamine hydrochloride are increasing to $33 per kilo from $31 per kilo; riboflavin USP is increasing to $48.50 per kilo from $46 per kilo; pyridoxine hydrochloride (vitamin B_6) is increasing to $36 per kilo from $33 per kilo; pure biotin will now be priced at $5 per gram, and biotin 1 percent will now be priced at $55 per kilo.

Takeda is also increasing ascorbate prices: ascorbic acid and sodium ascorbate are moving to $11 per kilo from $10 per kilo and direct compression grades of these two are also being increased on an equivalent basis. Also, calcium ascorbate is going to $14 per kilo.

Takeda cites the need to return to profitability and changes in currency values as being behind the increase. The company also notes that supplies of many vitamins are somewhat tight because reduced profits are forcing the industry to work with lower inventories.

Because of the currency situation, brokers are now working the other side of the fence. Suppliers explain that instead of buying material in Europe and selling it in the US, brokers are now buying in the US and selling in Europe because European pricing is now higher. Therefore, US suppliers of vitamins are benefiting from brokers, rather than being undercut by them.

Currency aside, one spokesman claims that "demand is a close second reason" for rising prices. The US is the world's largest market for USP vitamins.

Players expect vitamin prices to remain stable for the rest of 1986, but some hint firming could start again in second quarter 1987.

GENERICS — Generics continue to increase their share of the pharmaceutical market, said David Saks, drug analyst for Morgan, Olmstead, Kennedy & Gardner at a recent conference in New York. Mr. Saks claims that generics are heading toward a 50 percent market share, opposed to the current 12 percent.

He says that there are more than 100 recently off-patent prescription drugs with sales of more than $6 billion. He also notes that most of the top 100 prescription drugs will come off patent within the next four years, with 1987 and 1989 the two biggest years. These phenomena, combined with the economic and political pressures in the market place, should cause rapid generic drug growth in the 1980's and into the 1990's.

Based on the categories of "past growth," "future growth," "profitability," and "research and development," Mr. Saks rates LyphoMed as the top generic firm, followed by Mylan and Zenith. LyphoMed and Zenith are also considered the two most improved companies.

Mr. Saks concludes that there are less business risks today than in previous years. This is because most generic firms have many products, rather than just one. He adds, though, that many doctors prefer "old" products to "new" ones, because of their familiarity. Also, familiar products are much less likely to surprise patients with their side effects, if any.

Chemed, Merck Agree on Sale

Chemed Corporation and Merck & Co., Inc. last week announced they have entered an agreed in principle for Merck to purchase substantially all of the business and assets of Chemed's wholly owned subsidiary, Vestal Laboratories, Inc.

Chemed expects to receive cash payments totalling approximately $67.4 million from Merck over the next four years, the substantial portion of which would be paid at closing.

Vestal Laboratories, headquartered in St. Louis, Missouri, manufactures and markets professional skin care products, disinfectant cleaning products and instrument germicides to hospitals, nursing homes and general health care and other institutions and facilities.

Toxic Waste

Continued from Paga 3

such aa incineration, are expected to become the primary meana of disposing of hazardous waste in the future, as the agency phases out land diaposal of many toxic wastes over the next five years.

Waste minimzation can be accomplished through changes in manufacturing or operating processes (called source reduction) and through recycling of product or waste components. The agency found that initial source reduction can be accomplished through better internal management of production processes and company operationa.

"We discovered that by far the most significant first step a company can take to reduce its hazardoua waste production la implementing a number of 'good housekeeping' practices, such as preventing spills, leaks and the unnecessary mixing of hazardous with non-hazardous components," aaid Mr. Porter. "Many of these aimple steps can achieve a significant reduction in waste produced.

"However, as waste disposal coata increaae, companies are beginning to implement more complex technological changes in manufacturing processes. We want to encourage this effort across industry aegments through the development of our Federal information transfer and technical assistance program," Mr. Porter noted.

Good houaekeeping practices also could include reviewing internal management procedures to identify initial steps which could be taken to reduce the amount and toxicity of wastes, auch as aource reduction and recycling potential; aegregating hazardoua from non-hazardous waste streams; improving inventory control, such as separating hazardoua from non-hazardous substances; and training employees in better handling and control of hazardous substances and waste.

EPA said technology moditication appears to be the most promising source reduction technique of the future for highly-automated, large-volume production lines. In a chemical proceas, catalyst selection and process design continue to have the most direct affect on waste volume.

Hazardous waste recycled in the greatest volume are woste streams with constituents that can be reused in large-scale operations. This was the method of recycling used by the three manufacturing industries which accounted for 89 percent of the total volume of hazardous waate recycled in 1981: the transportation equipment induatry, which recycled wastewater treatment sludges from electroplating and from chromium plating solutions; the chemical and allied products industry, which recycled spent acids and alkaline solutions; and the primary metals industry, which recycled pickle liquor, a corrosive, metal-bearing waste.

Cost savings for waste reduction methods have been significant: for example, a facility in the chemicals and allied products industry has reprocessed spent acetone at a cost savings of $72,000 a year. A facility in the electrical appliance industry substituted a water-aoluble cleaner for the solvent trichloroethane (TCE) and recycled used TCE to ochieve a 30-percent reduction in waste at a cost savings of $35,000 a year. Another facility in the paper and allied product industry recovered vaporized solvent for a yearly cost savings of $1.8 million a year.

In another case study, a facility in the metal finishing industry achieved a 90-percent reduction in waste by recycling nickel plating aolution and a 50-percent reduction in cyanide and copper wastes by substituting a chemical cleaner.

The data also indicate that of the 266 million metric tons of hazardous wasle generated annually, the chemicsl industry producea 180 million, or 68 percent.

EPA's soon-to-be-developed computerized data base on waste minimization activities will be available to states and the general public. As part of its technical assistance program, the agency will develop technical information and will provide interested companies with names of state and Federal government experts in specific waste reduction activities.

Textile Deficit Hits $15.9 Billion

Imports of textiles and apparel for the first three quarters of the year hit a new record level, the American Textile Manufacturers Institute reported Thursday.

In figures released by the Department of Commerce, textile and apparel imports reoched 9.8 billion square yards for January–September, a 20.5 percent increase over the same period last year. Imports of textiles and apparel in september declined 6.2 percent from September 1985.

The textile and apparel trade deficit for the first three quarter of the year reached $15.9 billion, an increase of 17 percent over last year's record level. The textile and apporel trade deficit is 12 percent of the nation's totul merchandise trade deficit.

ATMI President Dewey L. Trogdon said: "There is no question that textile and apparel imports are a major national problem that is not going to go away. The 20.5 percent growth for the first 9 months of the year olone represents olmost 200,000 job opportunities lost for U.S. workers.

"September's slight decline in imports is not unexpected because some countries have filled their quotus very ropidly this year, disrupting our market.

"The 9.8 billion squore yards of textile and apparel imports that entered the U.S. during the first three quarters of this year are nearly as high us the total textile and apparel import level for oll of 1984," he sald.

"Since 1980, the industry haa seen one record year of imports on top of another. The trend continues and the overall trade figures make it clear that the American fiber, textile, and apparel industry muat have a legislative solution to this problem," Mr. Trogdon sald.

Paint Spray Costs Seen Skyrocketing With High-Solids

As manufacturers with paint spray booth operations convert to high solids paint, their booth treatment costs are skyrocketing. It used to be that chemical treatment could cost as little as a few pennies per job. Now manufacturers are faced with treatment costs typically ranging from $0.75 to $1.50/gallon of overspray paint—$1 per job or higher.

These higher costs reflect the mony problems associated with the use of base/clear coat, or other high solids paints: increased deposition, more frequent booth balonce and stack emissions problems, and more difficult and costly sludge handling, according to Carmen Sarno, assistant vice-president and director of engineering for the automobile industry at Betz Laboratories, Inc.

"Focusing on cost savings in one area can be misleading," warns Mr. Sarno, "because it may be costing you more in other areas. Instead, look to your bottom line when comparing different programs. A high return oo your investment should always be expected."

Of all the tangible treatment costs, operating expenses—such as temperature control, lighting, fans, etc.—are the only relatively fixed costs.

"Chemical costs are variable and depend on a number of factors like paint type," says Mr. Sarno. "Our costs average from under $1 to $1.50 per gallon of overspray base/clear or high solids enamels. This figure includes detackifiers, antifoams and sludge conditioners."

Maintenance costs vary depending on the treatment program and typically include daily cleaning of booth grates and walls, spray guns, paint lines and robotics, as well as periodic cleaning of the sumps, stack/fan, pumps, etc.

The most common method of sludge disposal is landfilling. Mr. Sarno estimates that non-hazardous sludge disposal costs range from $25 to $75 per cubic yard and haznrdous sludge from $50 to $150 per cubic yard. Solidification costs of liquid waste can add 20 percent to 60 percent to the disposal." Noturally, these coats are site-dependent and some variation is expected since all states have different regulations.

"Many people feel that sludge disposal is one area where money can easily be saved," says Mr. Sarno. "However, a chemical program aimed at reducing daily sludge disposal costs may do so at the expense of increasing long-term maintenance costs.

"Choosing the wrong treatment program results in poor efficacy. This means more live paint deposits in the system which increases maintenance costs. A highly-effective program results in completely killed paint, well-controlled sludge handling and less depoaltion in the system. Thus, maintenance cost are lower.

"In both casea, long-term sludge diaposal costs essentially remain the asme. If the sludge is not removed from the aystem on a daily basis, it will have to be removed during one of the large scale periodic cleanouts. The annual sludge volume and diaposal costa are relatively unchanged."

Sarno cites an example of looking to the bottom line for a return on inveatment in which the overall spray booth chemical treatment costs of one automotive manufacturer were $350,000 per year. The treatment

program reduced weekend booth maintenance manpower from 33 to 8 men—an annual savings of about $250,000; cut nightly outside contractor cleaning by half—an annual savings of about $100,000; and reduced dumping and pit cleaning frequency from 3 weeks to 20 weeks—an annual savings of $500,000. In addition, the treatment program was $150,000 less per annum than the previous program. However, annual sludge disposal costs were unchanged, despite the change in chemical treatment program.

In this case, reduced maintenance alone saved the manufacturer about $1 million. This resulted in a 3 to 1 return on chemical treatment costs.

"Added to that were other related savings that further increased the ROI," Mr. Sarno says, "including freight and drum handling reductions, energy savings in water reuse and filter media savings."

Mr. Sarno mentions other factors that should be considered in the ROI formula. Included are improved system reliability and less downtime, improved working environment, optimized scrubber efficiency which results in reduced stack emissions and balance problems, extended equipment life and consistent product quality.

"The best chemical treatment programs, in the final analysis, will usually cost nothing," says Mr. Sarno. "They should pay for themselves by the savings realized in other areas. Overall savings will not result by concentrating on just sludge disposal, maintenance or chemical costs. Because of this interdependency, proper attention to all areas and selection of the best program will provide manufacturers with the lowest bottom line costs and the highest return on their investment."

Carbide's

Continued from Page 4

have — by cutting capacity, moving into specialty products, investing in new technologies and forming new partnerships.

"Many Japanese firms that had limited interest in direct investment abroad," Mr. Kennedy added, "now operate plants in the US. We're going to see a lot more of that in the future as Japanese chemical companies diversify into areas such as pharmaceuticals and biotechnology, where American companies have solid beachheads."

Others, he said, will be forced to set up production facilities or partnerships to be close to their auto and electronics customers who are investing in US facilities.

"I sense an emerging consensus in Japan to open up the economy and make job-producing investments abroad," Mr. Kennedy also told the Tokyo gathering. "The faster that's done, the better it will be for all of us," he said.

Methylene Chloride Needs Better Study, Industry Asserts

In assessing the risk of methylene chloride, the Consumer Product Safety commission should use the available pharmacokinetic data to provide a better assessment of human risk, American Industrial Health Council said last week.

"CPSC should incorporate available pharmacokinetic data on DCM consistent with the increasing recognition in the scientific community that pharmacokinetic data should be reflected in risk assessment, including the choice of modeling procedure, where such data are available," AIHC said in comments filed with the agency.

The industry group says it believes that in assessing substances such as methylene chloride, the overall pattern of data provides reasons to depart from ultra-conservative upper confidence limits. Use of pharmacokinetic data in the risk assessment process will provide a better scientific basis for making a decision, says AIHC.

The council says it disagrees with the agency's use of 95 percent upper confidence limits in the methylene chloride assessment process because these limits "proved the decision-maker with a 'worst-case' prediction of risk that can be many times higher than the most likely estimates of risk."

In its comments, AIHC "commends CPSC for recognizing that regulatory decisions on methylene chloride should be based on a comparative risk assessment."

The group also says it supports the CSPC staff recommendations to convene a chronic hazards advisory panel, since interdisciplinary scientific peer review is a primary tool for ensuring high-quality risk assessment.

AIHC also notes that the high spontaneous incidence of mouse liver tumors and lung tumors in the test animals casts doubt on the relevance to humans of these test data.

It advises that the risk assessment should include a discussion of the epidemiologic data as a check on the risks predicted by the model used, and says CPSC should not aggregate benign and malignant tumors in arriving at a quantitative prediction of risk posed by methylene chloride.

CPSC approved and published in August a proposed rule on methylene chloride that could result in a declaration that household products containing the chemical are hazardous substances requiring special labels. However, the rulemaking process will probably take two to three years to complete.

In a related development, the Halogenated Solvents Industry Alliance has asked Food & Drug Administration either to terminate its rule banning methylene chloride's use in cosmetics, or to reopen the comment period on the rule.

The alliance of methylene chloride manufacturers told FDA that the cosmetic uses of the chemical are almost non-existent, therefore "no benefits would flow from regulating this particular situation."

The trade group also noted that FDA's determination that methylene chloride's cosmetic uses are dangerous would invite lawsuits by manufacturers and users of the chemical in other products.

"When all available scientific data are considered, the data indicate that methylene chloride is unlikely to present any significant human cancer risk," said HSIA.

Henley and ABM Charged by CCL

Contract Chemicals Ltd. a UK-based independent chemical manufacturer was granted a temporary restraining order by a New York County Superior Court judge on October 22 against Henley & Co. Inc. of Montvale, N.J., a subsidiary of the German pharmaceutical producer Boerhinger Ingelheim, and ABM Chemicals Ltd. of Stockport, England, a recently acquired subsidiary of Rio Tinto Zinc, the metals and chemicals multinational.

In the complaint before the court it is contended that Henley, while acting as CCL's agent in the US, was also negotiating to act in the US for ABM Chemicals Ltd., CCL's main competitor. CCL had at Henley's request supplied confidential information to Henley about its products, including price lists, uses, customer lists and specifications, and CCL alleges that this information could be used for ABM's benefit.

CCL alleges that it discovered the relationship between ABM and Henley by accident, when a routine telephone call to one of its US customers revealed that Henley had sold an ABM product which is also made by CCL to the customer.

Costs are being claimed for time and expenses in having to interview, appoint and train new agents caused by Henley's "sudden abandonment" of CCL.

Squibb Vaccine To Battle New Strain

E.R. Squibb & Sons, will introduce a monovalent vaccine for protection against a newly identified strain of influenze that has been implicated in outbreaks among children and young adults in Asia.

The current trivalent vaccine which had been developed for the current flu season, had been shown to be largely ineffective against the newly identified strain. While most influenza strains are identified by the Centers for Disease Control in March before the start of a new flu season, this particular strain, identified as Type A/Taiwan, was not identified until July of this year.

Squibb is providing the vaccine in response to a request by the CDC for vaccine manufacturers to begin production of a supplemental vaccine for use before the 1986-87 flu season. The vaccine will be available early in November.

Linda C. Wise, M.D., medical director of E.R. Squibb & Sons, US says, "While no one can predict whether the new strain will cause major outbreaks in the US this year, it seems prudent for those individuals who are at risk of developing serious complications from influenza to receive the new monovalent vaccine in addition to the current trivalent vaccine."

IBA Elects Board For 1986-87 Year

The Industrial Biotechnology Association has elected its officers for the 1986-87 year and increased its board of directors at the Fifth Annual Members' Meeting.

Officers are: Dr. George B. Rathmann of Amgen, chairman; Hugh A. D'Andrade of Schering-Plough, vice-chairman; Dr. John J. Norell of Provesta Corp., Phillips Petroleum, secretary; Dr. Jerry D. Caulder of Mycogen, treasurer; and Richard D. Godown, president.

Other directors on the board are Dr. Ronald E. Cape, Celtus Corp.; Dr. L. Patrick Gage, Hoffmann-La Roche, Inc., Gabriel Schmergel, Genetics Institute, Inc.; Robert A. Swanson, Genentech, Inc. Elected to the IBA board of directors for the first time were: Dr. Will D. Carpenter, Monsanto Co.; Dr. Ralph E. Christoffersen, The Upjohn Co.; Dr. Nicholas M. Frey, Pioneer Hi-Bred International, Inc.; Dr. Ralph W. F. Hardy, E.I. Technica International, Inc.; Dr. David A. Jackson, E.I. du Pont de Nemours & Co.; Dr. Hubert J.P. Schoemaker, Centocor; and Dr. Karl H. Voepel, Miles Laboratories, Inc.

Chemical Marketing Reporter
COATING MATERIALS '86

Solvent Rules Spur New Auto Finishes

US auto makers and their paint suppliers have shifted coatings technologies from solvent-based lacquer paints to high solids, reduced solvent content, base coat/clear coat systems. PPG Industries, Inc., one of the industry's largest suppliers of automotive coatings, says the new technology now accounts for more than 50 percent of US auto topcoats.

EPA's Standards on Solvent Emissions Have Us Auto Makers Scrambling To Beat the '87 Compliance Deadline

By OWEN KEAN

Car makers have until next year to comply with solvent emission standards implemented under the Clean Air Act, so the heat is on to produce attractive auto finishes at minimum pollution levels.

To comply with these regulations, auto makers and their paint suppliers have shifted their coatings technologies from solvent-based lacquer paints to high-solids, reduced solvent content base coat/clear coat technology.

Frederick F. Rhue, vice-president of automotive and industrial finishes for the coatings and resins group at PPG Industries, Inc., a major coatings supplier to the auto industry, says high-solids base coat/clear coat finishes now account for more than 50 percent of US auto topcoats.

This topcoat system consists of a highly pigmented base coat, mostly a high-solids acrylic resin, and a protective clear-coat on top, also acrylic-based, that adds luster and protection to the finish.

Mr. Rhue says Chrysler, American Motors and the US-based Japanese makers finish all their autos with the base coat/clear coat technology.

Ford has converted nearly 100 percent to base coat/clear coat, while General Motors still has substantial dispersion lacquer paint systems in place.

GM PHASES OUT LACQUERS

Joseph Piazzon, director of paint for GM's Buick-Oldsmobile-Cadillac group, says GM is phasing lacquer-based paints out on its assembly lines. He says the company has no timetable for replacing lacquer coats, other than as individual assembly lines are taken out of production for renovation.

Base coat/clear coat systems are currently solvent-based, but their high-solids content sharply reduces solvent levels. In addition, improvements in paint and process technology enable car makers to put on thinner coats, thus lowering paint consumption and reducing solvent use. Coatings are also being applied more efficiently, so less paint is wasted, and again, less solvents are allowed into the atmosphere.

While the acrylic-based base coat/clear coat systems have become the state-of-the-art in auto finishes, recently developed waterborne base coats are mounting a challenge to high-solids' market leadership.

Waterborne base coatings developed by Imperial Chemical Industries PLC and BASF Inmont are both in advanced stages of development, and both could be in commercial use in the next car model year.

ICI calls its coating system "Aquabase" and describes it as a "microgel technology (that) binds groups of water molecules together," with the paint

Coatings '86: A $10 Billion Market Is In View

COATING MATERIALS '86
AUTOMOTIVE FINISHES

encapsulated in small "blobs" of water.

ICI says the coating has a high viscosity level, so the paint can be applied in thin films, thus allowing the aluminum particles in metallic coatings to be applied smoothly and evenly. ICI says its "Aquabase" system reduces solvent emission in the base coat by 70 percent, compared to high-solids formulations.

"Aquabase" has been licensed to PPG and Du Pont in the US. ICI says GM will begin using base coat at its Oshawa, Ontario, truck and bus assembly plant this month, where it is supplied by ICI's subsidiary, C-I-L Paints, Inc.

Tougher emissions standards in Europe have prompted Volvo, Volkswagen, BMW, and Opel to all test the product.

Mr. Piazzon at GM predicts that waterborne base coats will be commercially used in the US in the 1988 car model year. He says waterborne base coats maintain the "glamour" look of the paint finish, while staying within volatile organic compound (VOC) emission standards.

By contrast, Mr. Piazzon says that with solvent-based high-solids base coats, "as you increase the solids content, there are indications you lose the ability to get ultimate glamour. If you go to high solids for (solvent emission) compliance, you sacrifice glamour." He adds that in other aspects, such as cost, the two base coat formulas are equal.

The major drawback with waterborne base coats, however, is that the paint must fully dry before the clear coat can be applied. ICI says "Aquabase" requires three minutes in a drying tunnel, compared to one minute for high solids base coats. This means that the tunnel must be tripled in length, or a log jam will be created along the assembly line. ICI says it is working to cut the drying time in half.

GM's Piazzon says it would be "ideal" if the waterborne coatings "flashed" (dried) in three minutes. However, he says "it has been our experience that it takes longer" than that, creating the need for even larger and longer production facilities. He says waterborne systems are not easily adapted to existing auto assembly spray booths.

Another problem with the waterborne system, ICI concedes, is that stainless steel pipes are required in the paint booth to prevent

AUTO COATINGS: Solvent emissions are being reduced in automotive coatings through use of high solids systems and advanced application techniques.

corrosion. Solvent-based paints do not have this requirement. As a result, ICI foresees the introduction of waterborne base coat systems coinciding with new or renovated assembly lines.

Another problem with waterborne paint is that the atmosphere of the spray booth must be controlled to ensure a constant evaporation rate, according to Sam Mills, process and systems manager for body assembly operation at Ford Motor Company.

In certain parts of the country, particularly the South, high humidity could significantly slow the paint's drying time, he explains. To rectify this, auto makers would have to install "very expensive" cooling systems in the booth, Mr. Mills says.

Inmont (which was acquired by BASF this year) has been using waterborne paints on cars built in California since the early 1980s. Inmont has painted 5 million cars in California using waterborne paints to meet the state's rigorous solvent emission standards, according to a company spokesman.

While water-based coats did not catch on nationwide until recently, BASF Inmont, with the help of Mobay Corporation, has developed a new base coat/clear coat topcoat system that has attracted great attention in Detroit.

POLYURETHANE SYSTEM

BASF Inmont's system combines a waterborne base coat with a two-component polyurethane clear coat. Mr. Mills at Ford says the two-component polyurethane topcoat is more durable than existing acrylic clear coats.

BASF Inmont which has tested its new system at GM's Corvette plant in Bowling Green, Ky., says its system requires a very thin film base coat which can be dried in three minutes, thus cutting down on retirement at the spray booth. Also, BASF says the paint cures at lower temperatures than conventional systems, thus cutting energy costs.

Dr. Volker Mirgel of Mobay says the two-component polyurethane clear coat also has higher chemical resistance and greater gloss retention than conventional acrylic finishes.

The system works by reacting a polyol with polyisocyanate in the spray gun. Mobay supplies these raw materials to BASF Inmont. Urethane coatings are already extensively used by car makers on lower body parts to prevent paint chipping caused by flying stones.

As a clear top coat all over the car, Mr. Mills favors polyurethane for "having better durability against industrial and insect fallout," than acrylic clear coats.

It withstands the rigors of [illegible] squashed insects and other contaminants, he says. GM's Piazzon says the [illegible] and durability of the two-component urethane clear coat is "very [illegible]."

Mobay's Dr. Mirgel says [illegible] two-component polyurethanes on [illegible] models, and BMW has recently [illegible] it in one assembly line. How [illegible]

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EPA Takes Hard Look At Marine Antifoulants

By GLENN HESS

Environmental Protection Agency says it expects to decide before next Summer whether it will temporerily suspend the use of certain tributyltin-based antifoulant merine peints on ell commercial and recrestional vessels.

EPA is studying the effects of those paints amid pressure from some researchers who say deformities in European shellfish eod laboratory evidence warrant an immediata ban on the material.

Tributyltin, or TBT, is a popular and effective marine paint additive that prevents barnacles and similar sea creaturea from latching onto boat bottoms and causing reduced fuel efficiency and frequent — and expensive — drydocking to heve the hull scraped.

The Navy has indicated a desire to paint its entire fleet with TBT paints, estimating a $5 million annual reduction in the cost of hull cleaning and a 15 percent annual savings in fuel consumption due to a reduction in the drag caused by fouling organisms.

tn addition to the $150 million annual savings, the Navy notes that copolymer TBT antifoulants have a lifespan of six to seven years while freely associated TBT or copper-based paints last approximately two years, further reduciog the cost of hull maintcnance.

However, some researchers believe TBT paints may be too effective because the chemical has been shown to bave lethal and sub-lethal effects on molluscs, such as oysters, and other, non-target organisms.

TBT has been called the most toxic substance aver deliberately introduced into the marine environment, and it is these other, unintended, effects on marine life that have caught the attention of Federal investigators.

"Recent research on TBT is posing bothersome questions on the chemical's impact beyond its stated use," says Rep. Walter B. Jones (D-N.C.) chairman of the House Merchant Marine and Fisheries Committee.

"We now know that it csn have serious consequnces — at extremely low levels — for valuable fisheries resources such as oysters. Its effects on other marine life and on those further along in the food chain — the consumer of affected seafood — is currently unknown," he saya.

Last January, EPA began a special review of the nine most common TBT antifoulant paint formulations to determine their effects on non-target organisms. The first step of this review — and its current status — is to request data from TBT paint manufacturers. The EPA study may take from three to five years to complete.

While the agency fills in the data gaps, John A. Moore, EPA assistant administrator for pesticides and toxic substances, says it may be necessary to impose interim restrictions on TBT paints until the comprehensive study is completed. He says a decision will probably be made in March or April.

At a congressional hearing on the TBT controversy, Robert J. Huggett of the Virginia Institute of Marine Science at William and Mary College, said he became curious about paints containing TBT when he used one on his boat.

"It was so effective, I wondered why," he told the House Merchant Marine and Fisheries oversight and investigations subcommittee. "I thought I should take a closer look."

"A ban on all tin-bearing paints in US waters would create economic hevoc..."

He notes that afler suffering a nearly 100 percent incidence of Pacific oysters with severe shell deformities in Arcachon Bay, France in 1981 banned the use of TBT paints on all vessels less than 80 feet in leogth.

Unusually thick shells with a ball shape rendered the French oysters unmarketable because of their odd shape and the small amount of meat they contained. Two years after the ban, Mr. Huggett said deformities had been cut in half and settlement of new oysters had increased dramatically.

Both Japan and England have banned or limited the uae of certain TBT products.

Although no effects have been discovered in oysters olong the East Coast of the US, Mr. Huggett says laboratory tests have revealed that TBT can hove toxic effects on shellfish larvee.

"Since some of the reported toxicity values are in the part per trillion range and the probability that some may hava been underestimated, it is prudent to exercise extreme caution when evaluating the costs and benefits of TBT in antifouling paints," Mr. Huggett advised the lawmakers.

Asserting that TBT from recreational vessels has contaminated a major portion of Chesapeake Bay, Mr. Huggett says he believes the availabla evidence is sufficient to warrant some sort of restriction. "I believe the potential is there to cause some serious harm," he says.

Lenwood W. Hall, Jr. of Johns Hopkins University says ha agrees that tha use of TBT coatings presents potential environmental problems to non-target aquatic organisms.

He asys results from various laboratory toxicity studies have shown that TBT is acutely toxic to aensitive estuarine aquatic life at extremely low concentrations.

"These compounds may cause potential environmentel problems in the Chesapeake Bay as the use of TBT paints on recreational and commercial vessels has been increasing in recent years," Mr. Hall says.

It haa been estimated that organotin antifouling paints are used by 90 to 99 percent of all large commercial vessels that use the Maryland waters of Chesapeake Bay, he

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Latex Systems Gain At Solvents' Expense

By STEPHEN KEARNEY

Environmentsl concerns continue to stimulate use of latex systems in the architectural coatings industry, at the expense of solvent-based systems.

Accordiog to Stanford Reaearch Institute, the two most widely used resins for architectural coatings last year were acrylic ond vinyl, both of which are used in water-based, or latex, systems.

Vinyl resins accounted for 32.5 percent of the market, acrylic resins 26.3 percent, and alkyd resins, used in solvent-based systems, held a 25.9 percent share of the market last year, according to SRI.

Skeist Laboratories expects use of latex resin systems to grow at an average annual rate of 2 percent over the next five years, compared to solvent-based systems, which could see a slight decline.

Latex paints are easier to produce because of their lack of effluent problems, and easier to handle because they are odorless, non-flammable, and removable without the need for thinner.

The movement toward water-based systems is both "highly desirable from an ecological point of view," according to Peter V. Robinson, associate director of polymer and coatings research for Glidden Company, and "economically desirable" in terms of relative costs. In addition, he asserts, the performance of water-based paints is now in many ways equal to that of solvent-based systems.

According to one coatings maker, "latex resins paints generally work on any surface, have excellent durability, and have a longer serviceability life than conventional solvent paints."

Latex resins perform very well on aluminum, adds another source, and outperform solvents in adhesion to galvanized iron.

Still, solvent psints have their adherents. The reason many customers continue to use solvent-based paints, according to one maker, is that "water fails on them" in matters of adhesion, spotting, and water resistance.

With water-based paints, he continues, there are limitations on application conditions related to high humidity and low temperatures.

There are substrate problems involved in painting over a solvent-based coat that may require the use of a solvent-based primer to gain adhesion and then two coats of latex top coat before approaching one coat of solvent top coat in performance characteristics.

One resin supplier observes that solvent-based systems "still have some specific advantages in stains, high-gloss paints, and adhesion characteristics." Others note that solvents penetrate into wood better than latex for such applications as deck paints.

According to Sherwin-Williams Company, in deciding which resin to use, customer preference plays a role: "Some customers are very loyal to solvent-based paints," says a spokesman.

Though acknowledging that improvements in latex paints have been gradual, Glidden's Robinson says that, taken incrementally, progress during the past 5 to 10 years in controlling the ability of water-borne paints to flow under various conditions has been fairly substantial.

One area of latex advancement involves high-gloss paints. Rohm and Haas Company, the leading acrylic resin supplier, has been promoting resins for high-gloss applications that "give you another dimension," according to one coatings manufacturer, because previously one "couldn't quite get up to a high gloss" with a latex resin.

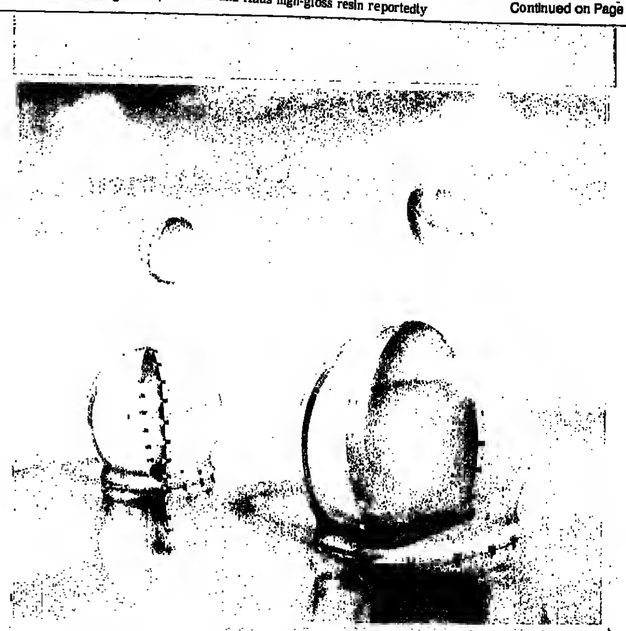
One coatings supplier says that one of Rohm and Haas' high-gloss products retains gloss longer than a conventional alkyd resin, but does not start out as glossy. Another Rohm and Haas high-gloss resin reportedly performs better in a salt spray chamber test than other water-based products, but not as well as most solvents.

"High gloss is a nut every latex manufacturer would like to crack," says the source, but the problem is that latex and solvent paints are chemically different. "With the latex, you get a continuous, seamless film."

Other concerns that latex makers are said to be addressing are rust inhibition and stain suppression. Rust is often a problem in painting over wood where nails are used, as the water-based paint can corrode the nail. Staining occurs when coloring materials, such as those in raw lumber, come through the paint.

Where latex paints are used in exterior

Continued on Page 40



ARCHITECTURAL MARKET: Performance of water-based paints continues to improve and is now in many ways equal to that of solvent-based systems.

Solvent Makers Eye Compliance Deadline

By RONALD BEGLEY

The solvents industry is busy reformulating away from oxygenated solvents which pose potential health risks to workers. At the same time, it is moving more and more heavily into high solids and waterborne technologies.

This move, along with the developments in oxygenates, is part of an effort to meet next year's deadline for compliance with the EPA's regulations concerning emission of volatile organic compounds (VOC's).

Propylene glycol-based solvents are becoming increasingly popular within the industry. Spurring the growth in these products is increasing industry awareness and concern over widely publicized scientific studies showing toxicity of ethylene glycol monoethyl and monomethyl ethers (EE and EM) and their acetates. The products have been shown to cause birth defects and testicular damage, and have been steadily losing ground in the market over the past few years.

The switch to oxygenated solvents in general was itself initiated by the need for compliance with the Clean Air Act's demand for the reduction of VOC's in the atmosphere.

The resulting turning away from hydrocarbon-based solvents led the way into increased use of high solids and waterborne technologies. In these areas oxygenates have found wide utility.

At the same time, the toxicity problems associated with EE, EM and their acetates have become more apparent, and the move away from them more extensive.

Picking up the slack left by the removal of these important solvents is propylene glycol monomethyl ether (PM) and ethyl ethoxypropionate (2-EEP). These materials, although traditionally produced in relatively small quantities, are currently growing rapidly at the expense of EE, EM and their acetates.

SOLVENT EMISSIONS: The coatings industry is busy reformulating away from solvents which pose potential health risks to workers, while moving at the same time to higher solids and water-based technologies.

The propylene glycol ethers and their acetates perform very well in high solids coatings systems. High solids technology is an area that the coatings industry naturally gravitated toward when it became necessary to find alternatives to the traditional high solvent, conventional solids systems.

There is less of a technological leap involved in the switch to high solids than there is with a move to waterborne, powder or radiation-cured coatings systems, which all involve a greater degree of equipment modification and therefore, a greater amount of initial capital investment.

The resultant exploration of high solids technology has yielded coatings of solids content ranging from 50 percent all the way up to 85 percent. Use of high solids formulations is expected to grow at a rate of 6 to 7 percent a year over the next few years.

Various solvents have been growing in popularity in high solids formulations. Methyl amyl ketone has shown itself to be a good versatile solvent. Its growth, however, is expected to be stymied by problems with another growing concern in the coatings industry — odor problems.

AUTO PLANT DROPS SOLVENT

In one case an automobile manufacturing plant was forced to discontinue its use of methyl amyl ketone in new car finishes due to odor complaints by people living in the vicinity of the plant.

Hexyl acetate is also an effective solvent in high solids and has been growing along with high solids technology, according to Union Carbide marketing manager David Lee.

Carbide is preparing to introduce pentyl and butyl propionates to the solvent market. These new products offer high transfer efficiency, good solvent cutting power for resins and minimum odors, Mr. Lee says, making them attractive for the high solids end of the industry.

Waterborne technology, the other major alternative to conventional solids formulations, is experiencing significant growth. As with high solids, the use of PM and its acetate is growing in this area, at the expense of ethylene glycol-based solvents.

Members of the industry who have made the move to propylene glycol-based solvents have discovered some benefits with the waterborne technology, according to Arco's John Quinlan, marketing manager for "Arcosolv" solvents.

He points out that the main benefit in enhanced resin systems has been found with propylene glycol ethers, thus improving shelf life while maintaining product quality. He says, Mr. Quinlan expects to see double-digit growth in propylene glycol-based solvents over the next few years.

Major growth areas for waterborne for-

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Coatings Men Primed For 5 Percent Gain

BY JAMES GUBITOSI

The more than 1,200 companies comprising the US coating industry are raising their gallonage shipments this year by about 5 percent to an estimated 940 million gallons, while dollar volume, swelled by 7 to 8 percent average price increases in the architectural paint segment, should reach just about $10.1 billion.

Following the acquisition of Inmont Corporation from United Technologies Corporation by BASF AG of West Germany late in 1985, two important acquisitions occurred this year.

The purchase of Ford Motor Company's automotive paint facilities by E.I. du Pont de Nemours & Co. puts Du Pont in closer contention with BASF and PPG Industries, Inc. Thus, the automotive coatings industry has so closely followed the pattern of consolidation in the industry it serves that the Big Three auto makers are now supplied by a Big Three coatings industry.

In contrast, the architectural paint industry remains as decentralized, diverse, localized, individualistic and personal as ever. Here, over 1,200 paint makers move their products into hundreds of thousands of local outlets.

Imperial Chemical Industries' acquisition of the Glidden paint operation of SCM Corporation will not detract from this diversity. Glidden is third largest among the ten largest architectural paint producers, but the combined volume of these ten producers amounts to only about half of this year's $4.2 billion volume of architectural paint.

Sherwin-Williams is by far the largest producer of architectural paints, with a volume of more than $800 million at the manufacturers' level in the US this year.

Next largest are PPG, which has under half of its $675 million coating volume in architectural and special coatings, and Glidden whose $400 million volume is all architectural and special coatings.

Other big architectural paint makers in the $300 million sales range are Valspar Corporation, which became big by acquiring Mobil Corporation's paint business; Benjamin Moore Corporation, and DeSoto Coatings, Inc., which sells a large volume of its paints through the Sears department stores.

Inmont, which ranks itself as second largest in original automotive coatings and third largest in refinishes, has added to its line the re-finish topcoats of the BASF affiliate that acquired the automotive coatings business of the Cook, Paint & Varnish Co. some years ago.

Inmont's strategy, a spokesman says, is to deliver a total package to its customers, including paints, phosphates, sealants and related products.

Inmont also is building satellite plants near its major automotive customers' assembly plants. Already in operation is a facility serving two Chrysler plants in St. Louis, Mo. Another to serve the GM plant in Linden, N.J., will be finished in December, and a third, for the GM facility in Tarrytown, N.Y.

Each of Inmont's new plants will provide not only "just-in-time" control of inventories of OEM coatings, but also continuous on-site quality checking, the spokesman says.

Inmont also has opened a 55,000-square-foot new applications research laboratory in Southfield, Mich., adjacent to an existing automotive R&D plant. J. Larry Jameson, Inmont's president, says the facility answers the auto industry's expressed need for more process development and product engineering—responsibilities previously assumed by the auto makers themselves.

DeSoto Chemicals' total sales in the first six months were $228 million, up 3 percent from $221 million last year, and earnings from operations edged up to $7.3 million from $7.2 million.

OTHER PAINT MAKERS

Industrial markets have been stronger than house paint business so far this year, but many of DeSoto's industrial products eventually go into consumer products. The latter include can coatings and siding coatings.

DeSoto has developed a coating for optical fibers to replace copper telephone wires. Conversions to the new fiber are under way in Japan through Nippon Telegraph & Telephone Company; in England, through a program managed by the National Post Office, and in other European companies through government-sponsored programs.

Conversion in the US has been slow, a DeSoto spokesman says. In fact, Corning Glass Works has laid off a significant number of employees because of a slowdown in US sales of optical fiber.

DeSoto's system is based on ultraviolet-cured coatings. This system has not only grown with the market, but has largely replaced silicon, which was one of the original coatings for optical fibers, the DeSoto spokesman says.

In Buffalo, N.Y. Pratt & Lambert, Inc., a producer of paints, chemical coatings and adhesives, had sales of $97.9 million in the first half, up from $94.1 million a year ago, and net income was $3,256,000, versus $2,998,000 last year. Third-quarter net income is estimated at $2.3 million.

"Sales to defense contractors, product finishers and packaging/paper coverters have been sufficiently brisk to overcome weaknesses in corrosion control, footwear, farm equipment and general aviation markets," says R.D. Stevens, Jr. chairman, and J.J. Castiglia, president. House paint demand has been satisfactory, they add.

H.B. Fuller Company, diversified specialty chemicals company headquartered in Arden Hills, Minn., near Saint Paul, says its largest operating group—adhesives, sealants and coatings—continued to perform well during the third fiscal quarter ended August 31.

Anthony L. Andersen, president of Fuller, reported nine-months sales of $399.6 million, up 14 percent from $341.3 million a year ago, and net earnings from continuing operations of $13,765,000, up 51 percent from $9,109,000.

Insilco Corporation, a diversified company based in Meriden, Conn., had 1985 paint sales of $230.6 million, up from $214.8 million a year ago, and operating profits of $17.9 million up from $16.9 million.

In Grand Rapids, Mich., Guardsman Chemicals, Inc., diversified coatings products, recorded third-quarter earnings of 1,169,000, up from $844,000 a year earlier, and sales of $24,833,000, versus $23,675,000.

Paint Makers Seeking Substitutes for TiO_2

By AGNES SHANLEY

Within the past few years, steady increases in the cost of titanium dioxide, by far the largest volume paint pigment, have challenged researchers to develop innovative alternatives to the white colorant.

Demand for TiO_2 is strong, and all producers of the pigment plan significant capacity expansions in the near future. Many of their customers, however, feel that the high cost of mining titanium ores, the current scarcity of rutile and the expense of upgrading ilmenite, as well as the cost of switching to the environmentally safe chloride process, will make higher TiO_2 pricing inevitable.

"Any substitute for TiO_2 which does not lessen paint quality has excellent market potential," one formulator says.

While no synthetic substitute for TiO_2 has yet surfaced, plastic products which allow for replacement of up to 25 percent of the total amount of TiO_2 in final paint formulations have established a growing market presence in the paint industry.

Relatively simple in design and fairly inexpensive to produce, these spheres of clear plastic, between 0.4 and 0.7 microns in diameter, contain one or more "microvoids".

These are tiny spaces which fill with air as the paint film dries, reflecting light, and greatly increasing the opacity of the final paint product, while offering substantial savings in TiO_2 as well as binder and resin costs.

Depending on the type of microvoid bead, the materials can be used in either latex gloss or flat mid- to high-performance white or pastel paints with a high titanium content. They are compatible with water-based formulations, and have already carved a niche for themselves in the architectural paint segment.

Although these have not yet seen the tremendous growth shown by plastic pigments in the paper coatings market, producers report that paint demand for beads has been showing double-digit growth since the products were first developed and marketed in the late 1970's.

Today, US paint companies have either developed their own plastic extender patents, licensed those of other firms, or are buying from the two sole US distributors of microvoid products, Rohm and Haas Company and Enterprise Companies, Inc. of Wheeling, Ill.

Rohm and Haas developed its own microvoid technology, which it markets under the "Ropaque" trade name, while Enterprise Companies licenses technology for "Sprindrift" polymer developed by the Dulox Division of ICI Australia, Inc. The two products have different properties and are used in different applications, but both are based on the same basic microvoid principle.

Glidden Paints, now part of ICI Americas, was, along with Dulox, one of the first to develop plastic extender technology. The firm does not market its plastic product, but uses its own patented polymer internally in its own lines of high-titanium content paint.

James Saynesbury, a marketing representative at Glidden Paints, Inc., explains that the Glidden product and plastic microvoid products in general allow for substitution of over 10 percent of the total TiO_2 required, reduce binder and resin requirements, and enhance washability of the final paint product.

"With calcium carbonate alone, you lose too much 'washability' in final product," he says. When $CaCO_3$ is used in conjunction with plastic vehicles," you get both better hiding ability and high washability."

The one commercial drawback he sees to the use of plastic extenders is that they require a good deal of product redesign, and a fairly extensive research and development effort.

"You can't simply take a latex formula, remove some of the TiO_2 and replace it with polymer. You have to reformulate the product and make a number of changes," he says.

CHANGES IMPROVE PAINT QUALITY

He feels, however, that the formulation changes are worth the improved quality of the final paint product and the cost savings.

Rohm and Haas developed its opaque polymer in 1979, and began to market the product in the early 1980's. Pamela Rogers-Moses, product manager for "Ropaque," describes OP-42 and OP-62, the company's original and improved opaque polymer paint products, as acrylic-styrene polymer spheres between 0.5 and 0.6 microns, with a 0.3-micron hollow core.

Originally filled with water, they are meant to be used in water-based emulsions. When paint is applied to a dry surface, water diffuses out of the microvoid as the paint film dries, and the voids fill with air; scattering light, and improving paint film opacity.

Depending on paint formulation, "Ropaque" allows for replacement of between 10 and 25 percent of the TiO_2 used per gallon, and cost savings of 10 to 33 cents per gallon.

It cannot be used with oil-based paints, but works well in gloss and semi-gloss, as well as some flat latex applications, providing better hiding capability than TiO_2 alone, Ms. Rogers-Moses explains.

While she emphatically states that it "will not put any TiO_2 producers out of business," opaque polymer product is finding double-digit growth in latex applications, and the market is expected to continue to expand at this rate through 1990.

Enterprise Companies has been marketing "Spindrift," for the past seven years.

Walter Krason, vice-president of research and development for Enterprise, explains that "Spindrift" is not competitive with Rohm and Haas' product. Although it, too, improves opacity, it is used only in flat paints, rather than semi-gloss latex.

"Spindrift" is made of polyester-styrene beads, with 6 percent of the total volume of each bead made up of TiO_2. The product is said to offer an average of between 12 percent and 15 percent savings on pigment and a significant savings on resin and binder.

Currently, "Spindrift" sells for 35 cents per pound. It has been showing 10 percent annual growth since it was first marketed.

Though its market is not as large as that for "Ropaque," and is more specialized, Mr. Krason reports that just under 5 million pounds per year of the product are currently being sold to most major US paint manufacturers. This 10 percent per year growth rate is expected to be sustained through 1990.

Although both products require substantial changes in formulation, many feel the savings they generate more than justify R&D expenditures. Currently, several major paint companies are involved in extensive development programs involving polymeric product.

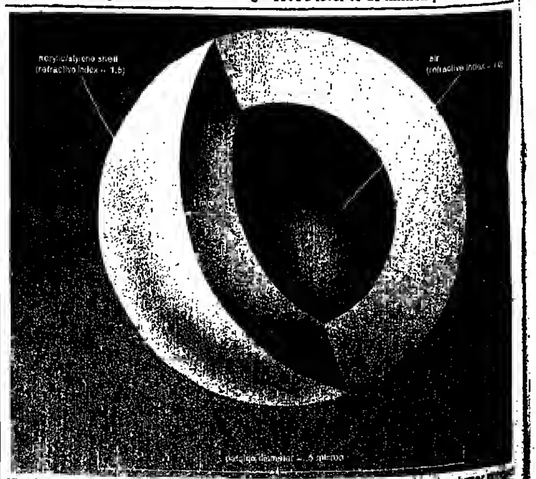
Meanwhile, traditional pigments and mineral extender materials are showing steady if not spectacular growth, hovering around the 2 percent mark this year, depending on their compatability with water-based and high-solids formulations.

According to Charles Kline & Co.'s most recent survey of pigment use in the paint industry, the total market for pigments and mineral extenders in paints is expected to reach 1.5 million tons, or 3 billion pounds this year, generating over $1 billion in revenues. By 1990, they expect the market to grow to 1.7 million tons and $1.2 billion in revenues.

As usual, the lion's share of the pigments market will be taken by TiO_2. Demand for this pigment last year totalled an estimated 665 million pounds, and this year, it is expected to grow by 2 percent, to reach 681 million pounds, or 93 percent of the total pigment market.

The paint market for iron oxides is expected to show similar growth. Last year, demand for this pigment totalled an estimated 125 million pounds; this year, the figure is forecast to reach 128 million pounds.

Reflecting the trend away from oil-based paints, zinc oxide demand fell 4 percent from 1984's level to 26 million pounds last year.



MICROVOID BEAD: Opacifying power of Rohm and Haas Company's "Ropaque" polymer derives from hollow sphere structure. Light is deflected at four points—where it passes acrylic-styrene shell, where it passes from the shell into the encapsulated air at its center, where it passes from the center of the shell to the other side of the particle and where it exits the shell. The products are being used to replace up to 25 percent of TiO_2 in some paint formulations.

Powder Coatings Set For Stronger Growth

By PHILIP MANN

Powder coatings' share of the US industrial coatings market should more than double between now and the early 1990's, according to producers of the materials, who see annual growth rates of 12 to 15 percent over the next five years.

Powder coatings currently account for about 6 percent of the industrial coatings market, compared to around 3 percent at the beginning of the decade, and their market share is expected to reach 15 percent early in the next decade.

While powder coatings were invented in Europe some 30 years ago, they didn't begin to catch on in this country until the mid- to late-1970's.

The process works as follows: dry powder is pneumatically fed from a supply reservoir to a spray gun where a low amperage, high voltage charge is imported to the powder particles.

The powder used in the powder coating process is comprised of resins and pigments and in its dry, formulated state is then sprayed onto a part to be finished.

The parts to be coated are electrically grounded so that the charged particles projected at them are firmly attracted to the part's surfaces and held there until melted and fused into a smooth coating in the baking ovens.

The coating process can be done manually, or by an automatic process, where computer programmed robots can perform the spraying in booths, some more than 100 feet long.

Observers claim that the wide variety of equipment available makes powder coatings feasible for the small end-use manufacturer, as well as for the large user who may need an extensive finishing operation for multiple products.

Powder coatings fall into two broad categories — thermosetting and thermoplastic. The choice of which to use depends largely on the application. With both types, heat is applied and the powder melts, flows and forms a continuous film.

"Advances (in the architectural extrusion market) will be coming in the very near future."

Thermosetting powder coatings are far more common than thermoplastic powder coatings. Sources estimate that more than 90 percent of powder coatings are thermosetting.

Generally, thermosetting powder coatings are used in decorative applications, or when comparatively thinner coatings are desirable.

Thermoplastic powder coatings, on the other hand, are more suitable for items requiring a thick coating, where extreme performance requirements must be met.

The principal resins used in the termosetting-type powder coatings are epoxy, polyester and acrylic. These are sometimes crossed by manufacturers possessing sophisticated equipment, to gain the best properties of each.

Thomas Topilsek, manager of marketing development at Prstt & Lambert, notes that while no new resins are expected to be developed soon, the current resins will probably be improved. Thermoplastic-type coatings mainly use vinyl, nylon and fluoropolymer resins.

Consumption for decorative uses is higher than functional consumption, and its growth should be greater, producers agree. For example, Dow Chemical USA forecasts decorative consumption will rise to 93 million pounds by 1988, while functional uses should increase to 42 million pounds. Current consumption figures are about 58 million to 60 million pounds for decorative, and about 35 million pounds for functional uses.

According to the Powder Coatings Institute, Alexandria, Va., more than 2,000 manual and automatic powder coatings operations exist today, roughly double the number just two years ago. These figures apply only to electrostatic coating operations.

The increase in operations is attributed largely to Environmental Protection Agency's crackdown on volatile solvent emissions.

A common problem among many finishing departments using liquid paint systems has been the increasingly high cost of meeting air and water regulations, as well as the disposal of hazardous and flammable wastes.

However, powder coatings contain no solvents and thereby emit negligible, if any, polluting volatile organic compounds.

Another advantage of powder coatings is that oversprayed powder is recycled, so hardly any solid waste is generated. PCI estimates powder's utilization rate at 95 to 97 percent.

INNOVATIONS IN POWDERS

Phillip Barnett, regional sales manager for Nordson Corporation, thinks that advances in material utilization are among the major innovations in powder coatings.

Mr. Barnett refers to the cartridge booth concept as being "the biggest" innovation of the last five years.

He says that a pleated paper cartridge, described as looking like a car's air filter but taller, separates powder particles from the booth's exhaust air, and traps them on the surface of its filter. Then, the particles become absorbed in an air current, which collects them for recycling to the powder gun. Mr. Barnett notes that separate cartridges are used for each color, so the particles are not mixed.

Yet another advantage (thought by some to be the most important) is the overall reduction in operating costs, compared to conventional solvents, waterborne and high solids coatings.

Operating costs actually used to hinder the powder coatings industry, because start-up costs are higher than for other coatings. So, even though overall costs were lower, some companies found the initial capital outlay too much to handle.

However, according to PCI and others, a combination of falling start-up costs for powder systems, along with increased costs for antipollution equipment, are helping to overcome this impediment.

The falling start-up costs are due to advances in technology, according to Gregory Bocchi, executive secretary of PCI. Two years ago, the initial capital outlay was about $150,000 for two electrostatic powder spray booths, four electrostatic automatic guns, one manual electrostatic gun, two reciprocators, and two powder recovery systems with automatic recycle. Now, according to Mr. Bocchi, the cost is closer to $125,000.

In comparison, the average start-up cost for a waterbased system is $108,000, for two water wash booths, one dry filter booth, four automatic electrostatic guns, two reciprocators and safety interlocks and stand-offs.

POWDER COATINGS: One of the fastest growing segments of the coatings industry, powder coatings' market share could reach 15 percent in the 1990's. Powders are a preferred finish for such things as wheel rims, refrigerator racks and washer tops.

The average start-up cost for a high-solids based system is $110,000, for two water wash booths, one dry filter booth, four automatic electrostatic high speed atomizers, two manual electrostatic guns, and paint heating equipment.

Powder coating material costs remain higher than those for most other systems. The annual cost of coating 12 million square feet of space would be $363,600 at a dry-film thickness of 1.5 mils. Substituting gallons for pounds, conventional solid material would cost $333,600, and high-solids material would cost $345,600.

However, as Mr. Bocchi and several manufacturers point out, powder makes up its these costs in total operating expenses. Based on material, labor, cleanup, maintenance, energy, sludge disposal and depreciation costs, total annual operating costs (per square foot). This compares with a $523,600 annual cost for conventional solvents (.0436 cents per square foot), $537,200 for high solids (.0448 per square foot) and $594,000 for waterborne coatings (.0495 cents per square foot).

"Powder coatings market share should more than double by the early 1990's."

PCI also notes that powder's energy consumption is 30 to 50 percent lower than for other systems, its labor costs are 30 to 40 percent lower, and waste is cut by 90 percent. Additionally, rejects are reduced by a factor of four or more.

As costs have declined, and powder coatings have become more accepted, their uses have grown. For example, powder has been used more often in the auto and truck market in many under-the-hood applications.

They are also being used to coat wheels. Industrial Powder Coatings, Inc., is applying a thermosetting epoxy powder coating to six-cylinder engine blocks.

According to Richard Finneran, the executive vice-president, IPC is coating about 5,000 engine blocks a day, with the potential for much more. Engines are coated to minimize rusting and improve appearance.

Charles Grubbs, development specialist at Mobay Chemical Corporation's coatings division, like other observers, thinks the automotive industry offers a big opportunity, and he calls this "a critical area."

Powder also continues to make headway in appliance applications. For example, it is being used as a replacement for porcelain on washer tops and lids. Also, it is coating the

Continued on Page 40

Coil Coatings Aiming For New Opportunities

By MICHAEL McCOY

Expansion in an industry dedicated to coating the output of the struggling steel and aluminum industries is an uphill battle, but the coil coating business succeeded, until just last year, in logging impressive growth figures. New applications present the opportunity to continue the upward trend this year and beyond.

According to the National Coil Coaters Association, total shipments of prepainted metal coil from US, Canadian and Mexican coil coaters were 3.986 million tons in 1985, down 5 percent from 1984's record-setting level. Coated steel dropped 8.1 percent, to 3.338 million tons, while coated aluminum gained 1.4 percent.

Almost all the 1985 loss in steel came from the industry's largest single market, coating steel with a weldable zinc-rich primer for corrosion resistance in auto body parts. NCCA reports that shipments in this segment, dropped 10.7 percent in 1985, to 1.278 million tons.

Replacing the zinc-rich primer is a zinc electrogalvanizing process developed in Japan. While 1986 losses in this area seem to be less severe, many coil coaters are writing off the segment and are instead looking to new applications developed in conjunction with paint and steel makers.

Most promising as a growth area appears to be the home appliance industry, a segment that currently accounts for slightly more than 3 percent of coil shipments.

"This is a very high interest area right now," says Robert Currell, vice-president, marketing and product development, at Whittaker Corporation. Within the past few years, he says, appliance manufacturers such as General Electric Company and White Consolidated Industries, Inc. have converted a segment of their refrigerator and freezer production to incorporate pre-coated metal in cabinet forming.

Happy with the results, these and other appliance makers are said to be planning conversion of other appliance lines to coil-coated cabinets. This should occur by 1988 for home laundry equipment and by 1990 or 1991 for kitchen stoves, according to one paint maker.

For the time being, paint companies are working to develop systems that will meet the rigid specifications the appliance industry has already established for post-paint cabinets.

Paints must be flexible enough to be formed into the shape of the cabinet without cracking, but tough enough to withstand an environment significantly harsher than the one refrigerators face. Stain, abrasion, detergent and corrosion resistance are all necessary, Mr. Currell says.

Converting to pre-painted metal is an advantage to the appliance maker for a number of reasons. High on the list are environmental considerations.

Most coatings in this market are solvent-based, and as Federal regulations become more and more stringent, compliance can be difficult for an appliance maker or, for that matter, any company that is post-painting with a solvent-based paint.

For today's coil coater, however, that obstacle has already been surmounted. "This is the only thing we do," says John Benson, vice-president of sales at Roll Coater Inc., "so it was a necessity that we come into compliance."

EPA, he says, came down first on coil coaters like Roll Coater that are large solvent users. By now, Mr. Benson feels, most in the business of coil coating with solvent-based paints have mastered EPA's regulations.

EPA COMPLIANCE EASIER

Complying with EPA is usually easier for a coil coater than for a spray coater. Observers say that in a modern coil coating system, the time between application of the coating and entry into the baking oven is measured in seconds.

Consequently, up to 95 percent of the solvent system is still in the paint mixture when the coil enters the oven. There the solvent is easily collected and incinerated, often to be used as a source of heat for the building.

On the other hand, with a spray-applied coating, as much as 75 percent of the solvent has evaporated by the time the piece reaches the oven. Collection of this solvent from the general atmosphere is a more difficult and costly task than collection in the oven.

Mr. Benson believes any manufacturer using solvent-based coatings and planning to expand or modernize is going to seriously consider pre-coated metal.

Weighing the cost of compliance against the savings in plant size and insurance costs that come with pre-painted metal is what is turning more appliance manufacturers to coil coating, Mr. Benson feels.

Another coil coating market just in its infancy is "under the hood" automobile parts. According to John Williams, technical marketing manager for Mobay Corporation, air filter housings, valve covers, oil pans, engine covers and fan blades are all potential candidates for coil coating.

Any coating used on such parts must be hard as well as resistant to oil and gas. More importantly, the coating must be able to accommodate up to several inches of stamping and drawing that is necessary to form the piece from sheet metal.

Dr. Williams says Mobay has been successful in making headway in this market with coatings that incorporate the company's blocked polyisocyanate technology.

Commercial penetration of the "under the hood" market is further down the road, since the conversion to a pre-coat system means significant investment for the auto maker in machinery such as stamping equipment.

Dr. Williams believes, though, that conversion would be "tremendously economical to the auto industry" and anticipates real coil coating growth in this area.

Another emerging field, according to Charles Todd, coil coating sales manager at Lilly Industrial Coatings, Inc., is the office furniture — desks, file cabinets, computer tables and the like — that is welded or mechanically fastened together and then electrostatically spray painted. This method, say coilers, can be inefficient and can also pose the familiar environmental problems.

Welding coil-coated steel is possible, but difficult, says Mr. Todd, owing to the problem of heat deformation of the paint. Such furniture can be produced, though, by forming coil-coated steel and bonding it with a structural adhesive.

Essex Specialty Products, Inc., a subsidiary of Essex Chemical Corporation, makes "Betamate," a urethane-based structural adhesive that the company claims is suited for this purpose. Thomas Farrell, "Betamate," marketing manager, says that an evenly distributed "Betamate" bond is as much as three times stronger than a spot weld.

Moreover, he says, a bonded piece of furniture is quieter than a welded one due to the adhesive's relative flexibility. Mr. Farrell says that office furniture made with "Betamate" structural adhesives is not yet on the market but expects an entry by early 1987.

One of the largest uses for coil-coated steel and aluminum is the building products business, accounting for one-quarter of coil shipments in 1985, according to NCCA. Coatings used in this area tend to be polyesters, linear polyesters, siliconized polyesters, and PVC resin-based products.

An area of interest and growth within this market is fluoropolymer-based coatings, which make up about 5 percent of the total coil market.

PENNWALT RESIN USED

Called the "Cadillac" of the business by one marketer, these products are based on the "Kynar" 500 polyvinylidene fluoride resin produced and licensed by Pennwalt Corporation.

Four paint companies — PPG Industries, Whittaker, DeSoto and Glidden — make "Kynar"-based products. Howard Fowler, market development manager of PPG's coil coatings group, says that these coatings usually end up on high viability buildings.

Most involved in the business say "Kynar"-based products have been growing above the paint industry average, buoyed by the commercial building growth of the last five years.

Another growth area for both fluoropolymers and siliconized polyester coatings is what Mr. Fowler calls standing seam roofing: ridged metal roofing that tends to be used on commercial buildings like shopping centers.

COIL COATINGS MARKET: Coil coaters have been hard-pressed to meet projected growth figures in the face of declining markets for steel and aluminum, but observers feel new applications afford the opportunity to continue the industry's upward trend this year and beyond.

COATING MATERIALS '86
COATINGS '86

Solvent Standards

Continued from Page 30

and other experts acknowledge that several hurdles must be overcome before polyurethane top coats are in wide commercial use.

One major concern is the presence of highly toxic isocyanates in the spray gun. Dr. Mirgel says the spray booths on the assembly line must be sealed off from humans, a conversion process he calls a "major investment."

Mr. Mills and Mr. Piazzon both note that sophisticated metering systems are required to insure a proper blend of the polyol and polyisocyonate components, a requirement which Mr. Piozzon calls a "critical issue."

Because of these and other factors, most auto paint experts say that two-component polyurethane clear coats won't be in widespread use until the 1990's.

Another challenge facing auto makers and their paint suppliers is matching the paint finish of steel body panels with plastic body panels which are now painted off-line.

Currently available plastic body panels, particularly those made of reaction injection molded polyurethane, go through the curing process at significantly lower temperatures than do painted metal parts. As a result, plastic parts are currently assembled and painted separately from the major metal parts.

Bee Chemical, a unit of Morton Thiokol, says it has developed a coating system that can make a hybrid steel-plastic auto exterior topcoat appear uniform. Bee calls its product "Unicoat," a line of primers and topcoats, it says can allow hybrid cars to be primed and finished in one place.

Bee describes its topcoat finish as a "modified" thermosetting acrylic resin base coat/clear coat, and its primer is based on the same technology.

LOW VOC LEVEL

The paint system can be applied with conventional technology, and has very low volatile organic compound emission levels, the company says. The company also says its layers can be cured at 175 degrees Fahrenheit, allowing them to be used on RIM parts.

Bee has been working on the "Unicoat" system for the past seven years, but the product gained little attention until recently. According to Joseph E. Klein, vice-president of marketing at Bee, three factors sparked auto company interest in Bee's paint system.

First, the company was aquired by Morton-Thiokol in early 1985, giving Bee more financial muscle for research and development work and marketing. Second, the "Unicoat" system recently was awarded a "Qt Preferred Quality Award" from Ford for products shipped from Bee's Lansing, Ill., manufacturing plant.

In addition to providing higher visibility to "Unicoat," the Ford award stipulates that the auto makers will "give preference to (Lansing) for participation in new part development programs and in source selection."

Mr. Klein also notes that a commitment by Bee to build a multi-million dollar "assembly line type paint line" in Belleville, Mich., will enable auto makers to test and evaluate the "Unicoat" system on a large scale.

Mr. Klein says the "Unicoat" system has already generated "tens of million of dollars" in sales to the major auto makers and their suppliers, but to date, "nobody's painting the full car with 'Unicoat'."

At present, the system is only being used on plastic parts, Mr. Klein says, and in metal parts located in high abrasion, high impact areas of the car he calls the "stone zone."

He predicts that "Unicoat" will "get its first colors awarded for the 1988 model year," although he concedes that "it's a major step for (a car maker) to paint (hybrid models) universally. It takes a lot of risk for a car company to be the first."

Mr. Mills at Ford says high-solids clear coats "don't have the flexibility strength to be used on plastics." He says that at this point, "RIM can't use the same clear coat as metal."

Mr. Piszzon of GM says having "universal clear coats is extremely important," but that using them "creates another problem."

He notes that RIM parts have been painted off line for years." To rearrange the assembly line to install RIM parts prior to painting would create "job spacing" problems, and assembly lines would have "to be redesigned" to incorporate RIM products.

He says this problem applies specifically to RIM products that must be processed at low temperatures. He says no problem exists with sheet molding compound and composite plastics, because available clear coat systems work well.

"The concept is a good one," Mr. Piazzon says, and "there is a need for products of that type." However, "the ultimate use of (universal clear coats) is somewhat limited by restrictions in the facility."

EPA Takes

Continued from Page 32

notes, and recent studies have revealed that up to 48 metric tons of tin per year are loaded into the Maryland portion from small and large water craft.

But Arthur Sheldon, director of safety and environmental affairs for M&T Chemicals Inc., the major manufacturer of organotin chemicals in the world, says laboratory tests cannot be compared to actual conditions of ecological systems.

"Laboratory experiments, while of value in determining the range of toxicity for a chemical, do not address the question of the potential effect in a true ecosystem which in nature presents many complex interactions," Mr. Sheldon says.

Because laboratory studies and models tend to vastly simplify the environment in order to make estimates, he says it is extremely difficult to use laboratory data to predict the effect of TBT on inland waters. Field studies are needed to make that determination, according to Mr. Sheldon.

He also maintains that although organotin chemicals are classified as heavy metals, they do not accumulate or persist in the human body or in the environment. In humans, Mr. Sheldon says they quickly metabolize to less toxic forms, and the same pattern of degradation occurs in the environment.

Thomas J. Gibbons, director of marketing for International Paint Company, says it is important that regulatory actions taken by the government be based on hard scientific fact because a ban on TBT paints would have severe economic impacts.

"A ban on all tin-bearing paints in US waters would create economic havoc, as well as great enforcement problems, since some 70 percent of all ocean-going vessels are coated with these products," says Mr. Gibbons.

He also contends that a ban of all application of TBT-containing paints within the US or to US flag vessels would cause significant damage to these sectors compared to foreign competition.

Instead, Mr. Gibbons suggests that regulatory considerations focus on acceptable release rates, and points out that TBT's are released more quickly from free associated paint than from copolymer paints.

Copolymers compose 20 percent of the market and free associated paints, 10 percent, he says. By banning free associated tin-bearing paints, Mr. Gibbons says, 85 percent of the TBT releases would be eliminated.

He says a restriction of free association products would not have a great impact on the US Merchant Marine fleet or on shipyards, but would adversely impact some sectors of the recreational boating industry.

In freely associated antifoulant paints, TBT is physically incorporated into the paint matrix. The TBT is slowly released through diffusion as surface paint particles dissolve. This type of paint is characterized by a high initial release rate and a short time period of protection.

TBT in copolymer paints is chemically bonded to the paint polymer and is released through a bond breaking process of hydrolysis. New TBT molecules are exposed and released by the gradual erosion of the paint as the vessel moves through the water.

EPA estimates that approximately one-third of the 800,000 pounds of TBT produced annually is used in antifoulant paints, one-third in wood preservatives, and one-third in other pesticides.

Solvent Makers

Continued from Page 34

mulations have been and will continue to be auto primers, can coatings and pre-finished wood and flatboard, according to Mr. Lee. "These have traditionally been areas for conventional solvents, but now waterborne has taken them over," he says. He goes on to point out that waterborne base coat in automobile base coat/clear coat systems is an emerging technology which may or may not find widespread acceptance.

One solvent traditionally used in waterborne coats which may not be sharing in that growth is ethylene glycol monobutyl ether (EB). Although free of VOC concerns, EB's close chemical relationship to EE and EM has focussed attention on its toxic effects, leading one industry source to say that EB is suffering from "guilt by association."

EB, an effective coupling agent, plays an important role in waterborne coatings. According to one producer, it accounts for 80 percent of glycol ether solvent demand in waterborne coatings; use of EB has been expanding steadily over recent years. Nevertheless, toxicity concerns are leading many coatings producers to reformulate away from it.

Several solvents are competing to replace the popular EB, which saw total 1984 production of 270 million pounds in the US, according to International Trade Commission figures.

EB accounted for over 30 percent of the total 1983 consumption of glycol ethers and their esters in the coatings industry, or more than 75 million pounds.

As it is with other suspect solvents, PM is being used as a replacement here, as is dipropylene monomethyl ether. Another solvent that is growing at the expense of EB is propylene glycol tertiary butyl ether (PTB), which was designed with substituting for EB in mind. Other contending propylene glycol-based products are isopropyl ether, mono-t-butyl ether, and n-butyl ether.

The problem with some of these solvents, though very effective, is that they are more costly than EB — as much as four times more expensive in some cases.

Besides spurring growth of oxygenated solvents, the upcoming deadline for nationwide VOC compliance has also led to increased use of some chlorinated solvents.

Among these is 1,1,1 trichloroethane, which is the most predominant metal cleaning solvent currently used in the US, according to Dow's Robert Simmons, an industrial marketing manager for that company's chemicals and metals department.

Another chlorinated solvent, methylene chloride, has come under scrutiny from both industry and government due to toxicity concerns. Although predominantly used as a paint stripper, methylene chloride has drawn some positive attention in recent years as a solvent in coatings formulations, due to the low level of VOC concerns associated with it.

It is considered an excellent solvent, and very difficult to replace. Substitutes under consideration include acetone and methyl ethyl ketone, but their high flammability is a serious drawback.

Perhaps more likely as a candidate for replacement in combination with other solvents is n-methyl pyrrolidone, which is also finding greater use in waterborne coatings.

Use of conventional solids coatings by 1993 will be less than one-third of what it was in 1973, according to a spokesman for a major chemical company.

In 1973, he says, conventional solids represented 79 percent of the OEM coatings market, waterborne 12 percent, high solids 8 percent, and other technologies 1 percent.

By 1993, conventional solids will represent just 24 percent, waterborne 36 percent, high solids 31 percent, and 9 percent for the others, such as powder and radiation-cured coatings systems.

Latex Systems

Continued from Page 33

settings, acrylic is said to be the premium resin. "In terms of durability, ultraviolet light stability, color permanence, flexibility and surface adhesion," acrylics are preferred, says an analyst at Charles H. Kline & Co.

Less expensive vinyl resins take a large share of the interior market, but have difficulty matching the performance of acrylic systems in exterior use. At Sherwin-Williams, "with house paints, we use mostly acrylic. Due to cost considerations, we have been working on vinyl, but it absolutely has to meet the performance requirements" before it is used.

An Air Products spokesman says there is a trend in the industry involving staking out a position somewhere between acrylic and vinyl resins. Vinyl resins are a low margin, commodity business, he says, and "more companies are trying to move into the middle-ground with specialty materials" in order to earn a higher return.

"The trend is to try to get away with some specialty terpolymer replacing pure acrylic for exterior and interior semi-gloss," he says. Union Carbide Corporation has a line of acrylic terpolymers that have cut into Rohm and Haas' hold on the acrylic market, he notes.

Unocal Corporation says that it is increasing its sales of styrene-acrylic resins in architectural coatings. "There is no reason why a pure acrylic is required," says Mike Brennan, manager of polymer market development.

A spokesman at Interez Inc., formerly Celanese Specialty Resins, says his company is placing its emphasis on two areas of higher-performing waterborne resins. These are a two-package waterborne epoxy and amine-type curing agent and a two-package waterborne epoxy and acrylic-type curing agent.

Powder Coatings

Continued from Page 38

dryer drum and spinner basket markets. At the end of 1985, according to industry figures, appliances had the largest share of powder coatings consumption, at 18 percent.

Next was coating of metal furniture (17 percent), followed by electrical coatings use (12 percent).

Transportation uses, at 11 percent, should grow because of under-the-hood uses. Machinery and equipment also have about 11 percent of the consumption share.

Mobay's Grubbs notes that the architectural extrusion market has been big in Europe for years. "It'll happen in the US. Advances will be coming in the very near future," he says.

Equipment manufacturers are working on ways to make powder coatings more usable with heat-sensitive items, including many plastics. Pratt & Lambert's Toplisek believes that a lot has already been done in this area, and notes that low-temperature powders have been developed.

These powders, he says, give the end-user a choice of using high-temperature powders for less time than normal, or using low-temperature powders for a longer time.

Another breakthrough may revolutionize the powder coatings industry, according to Volstatic, Inc. Called the "Color Specialist," it is designed to lessen the time needed to effect a color change in application equipment.

COATINGS & PLASTICS

ABS Rebounds

Continued from Page 5

low when raw material costs fell earlier this year. There was a lag time of two months before prices for the plastic were adjusted, he adds, and any passalongs of higher monomer costs will take a similar amount of time to implement, if they occur at all this year.

The lower US dollar value, which has caused import levels to fall in many chemical markets this year, has had no effect on the ABS market; this year, imports should be significantly higher than last year's 62 million pounds.

This August, Bureau of Census figures show imports totalling almost 50 million pounds. Continuing at this rate, they are sure to surpass 1984's record of 72 million pounds.

At least one producer feels that import levels are now beginning to stabilize, and should begin to fall over the last quarter this year. As he explains, published figures are frequently misleading, since all of what comes into the US is not necessarily sold. Another producer agrees that import levels will fall over the next few years as US resin makers focus on value-added services and specialty products which cannot be made abroad.

Nevertheless, producers concur that imports should capture between 6 and 8 percent of the total US market this year. Working inland from the East and West Coasts, imports continue to affect domestic pricing. Large customers know this cheaper material is out there, and are using this to pressure US manufacturers to bring down prices. The effect of imports is most pronounced in low-end commodity markets, since most of the material produced abroad does not qualify for use in higher end markets.

FINISHED ABS GOODS

Less obvious than imports of plastic pellets, but still a pervasive market presence are imports of finished ABS goods, which began to surface in the US about 5 years ago, reaching a peak in 1984 and 1985.

Currently, Mexico and the Far East are said to lead in exports of finished machinery and automobile parts containing the plastic.

Telephone manufacturing, a small but once profitable outlet for US manufacturers, has moved entirely offshore, producers report. Without finished good imports, domestic growth for the resin would be 1 to 2 percent higher per year, one producer explains.

Good news for ABS producers in the US this year is that both home appliance and business machine markets are strong. The Association of Home Appliance Manufacturers reports that domestic factory shipments of refrigerators and other home appliances totalled 33.7 million through September, up 6.4 percent over the previous year.

Similarly, the Computers and Business Equipment Manufacturers Association sees revenues from computer sales rising 20 percent this year over last year and business machine sales improving by 3.4 percent. Demand is clearly moving up, they say, after an extremely poor showing last year.

Reflecting the health of these two markets, ABS producers see home appliance demand for ABS tracking GNP this year, while business machine and computer housing demand should rise by between 5 and 8 percent. Next year, producers expect growth in the computer and business machine segment to reach 10 percent. Last year, demand for ABS fell 5 percent overall, based on lower demand in this segment.

The automotive market, which accounts for roughly 20 percent of the total ABS market, has been weak this year. The Motor Vehicles Manufacturing Association reports that by the end of the third quarter this year, domestic passenger car sales fell 2.2 percent while imports rose 15 percent. In August, inventories rose 12 percent. Despite higher sales, September's inventories were still 5 percent higher than they had been the previous year. Most producers, gauging their response to fairly low domestic output this year and higher inventories, expect minimal increases at best in this segment of the market.

Although some expect recent sales incentive to have some short term effect on demand, ABS producers are not expecting any miracles.

Both Borg-Warner and Monsanto have inexpanded ABS capacity through debottlenecking this year. Dow Chemical Company plans to have a new capacity in Hanging Rock, Ohio on line by the first quarter of 1987.

Since September, capacity utilization has stood at 80 percent of nameplate. With the new expansions, many fear that this figure will drop to the low 70's, with obvious effects on pricing.

Although the resin has lost some ground to cheaper plastics in the commodity areas, particularly pipe, ABS is said to be capturing market share from some of the more expensive engineering polymers.

ABS-nylon alloys, such as Monsanto's "Triax" and Borg-Warner's "Elemid," both introduced this year, currently show great potential in industrial and automotive applications. Other pockets of high growth for ABS include medical instrumentation housings.

Although healthy, the US market has certainly matured since the days of double digit growth in the '80's. Despite a worldwide overcapacity problem in the commodity resin area, producers see growth opportunities for higher-grades resin developing in Southeast Asia, Peoples Republic of China, Eastern Europe, and Latin America, small bases which are showing annual growth rates of from 8 to 12 percent per year and which could boost export figures significantly by 1990.

Meanwhile on the domestic front, producers continue to trade higher operating rates for better prices in an attempt to keep up with this competitive market.

PRICES TRENDLINES

WEEK ENDING OCT. 31, 1986

CHANGES/UP

None

CHANGES/DOWN

None

COATINGS INDEX

The Coatings & Plastics Index reflects the prices of 13 representative materials in this sector and the quantity of each produced in 1985.

Oct. 31, 1986	306.4
Oct. 24, 1986	306.4
Oct. 3, 1986	308.4
Nov. 1, 1985	308.4

Chemical Prices Start on Page 48

THERMOPLASTICS

BULK PRICES IN OCT. 1986

		OCT. ($/lb)	SEPT. ($/lb)
Polyethylene-LD,liner	lb.	.29-.30	.25-.27
Polyethylene-HD, injection	lb.	.27-.30	.24-.26
Polyethylene-LLD[1]	lb.	.29-.32	.28-.30
Polypropylene, molding	lb.	.33-.37	.33-.36
Polystyrene, g.p.	lb.	.34-.37	.35-.37
Polyvinyl chloride, pipe	lb.	.29-.30	.28-.29

[1]Butene-1 comonomer.

PLASTICS MATERIALS

LIQUID CRYSTAL POLYMER — Dartco Manufacturing Inc. plans to reduce prices for its full line of "Xydar" injection moldable liquid crystal polymers, in an attempt to expand market share for the product.

The company has lowerd prices for its "FC series" of glass and mineral-filled high per-

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HEAVY & AG CHEMICALS

NPK Consumption

Continued from Page 3

cause the $2 per bushel payment should free up additional cash for fertilizer purchasing.

US nitrogen producers will be hit especially hard by the drop in nitrogen consumption. Many industry observers feel this year's record nitrogen import levels will continue through 1986-1987, leaving US nitrogen producers to bear the brunt of the consumption decline.

For instance, Mr. Baumes calculates that 4.1 million short tons of nitrogen were imported in the 1985-1086 fertilizer year. With new capacity coming on in Trinidad and Canada in 1087 he says imports could increase even more.

Fertilizer movement has been slow this Fall, and like last fertilizer year, producers are looking toward heavy Sprtng movement. Sources quote bargelood quantities of ammonia al $70 to $75 per ton in the Gulf, noting though, that barge sales are uncoomon.

Phosphate producers can afford to downplay the PLD announcement because they are concentrating on the export market. Mr. Nyiri believas the export strengthening will continue, and estimates calendar yeor 1987 exports will be up 500,000 to 600,000 tons, P_2O_5 basis, over this year's levels.

PHOSPHATE EXPORTS UNCHANGED

Aa it is, Mr. Nyiri says August, September and October each saw about 500,000 tons in P_2O_5 export sales, for a 3-month total olmost the same aa the total for first 7 months of the year.

Also expected to help exports in the months ahead is the late-August cancellatoo of an EEC quota on US ammoniated phosphates. The quota was instituted in retallation for US limits on finished steel imports from the EEC.

Pakistan, India and Latin America are said to be dominating export trade. China is atill expected back in the market, although its purchaae power may be hindered by a lack of hard currency. Barter agreementa are expected to be prominent in months ahead.

Meanwhile, US Gulf bargeload movement of phosphates is said to be very alow at present. One product puts DAP prices out of river terminals in the Midwest in the $150-per-ton-range.

BASES & SALTS

ALUMINUM SULFATE — Tennessee Chemical Company is announcing an $8 per ton off-list price increase on liquid alum. The increase goea into effect as contracts permit and appliea to all four of the componies producing locations: Augusta, Go., Cotawhn, S.C., Cedar Springs, Ga., ond Springfield, Tenn.

The increase followa similar announcements by Stauffer Chemical, General Chemical and General Alum & Chemical.

SODIUM BICARBONATE — Two producers of sodium bicarbonate have announced price increaaes of 50c. per hundredweight.

Stauffer Chemical Company's hike is effective November 15 or as contracts permit. The new pricing, per hundredweight, f.o.b. Chicago Heights, Ill., freight equalized with nearest competitive producing point, ts as follows: powdered USP/FCC, $18.55 in bulk, $17.55 in 50 and 100 pound baga and in Super Sacs; powdered technical, $16.40 in bulk, $17.40 in the three bag sizes; fine granular USP/FCC, $17.10 in bulk, $18.10 in the three bag sizes; extra fine powdered USP/FCC, $16.70 in bulk, $17.70 in 100 pound bags and Super Sacs; coarse granular USP/FCC, $17.55 in bulk, $18.55 in 100 pound bags and Super Sacs; treated free flowing FCC, ct available in bulk, $17.90 in the three bag sizes; industrial, $16.25 in bulk, $17.25 in the three bag sizes.

PRICES TRENDLINES

WEEK ENDING OCT. 31, 1986

CHANGES/UP
None

CHANGES/DOWN
None

HEAVY & AG INDEX

The Heavy & Ag Chemicals index reflects the prices of 18 representative materials in this sector and the quantity of each produced in 1985.

Oct. 31, 1986	113.69
Oct. 24, 1986	113.69
Oct. 3, 1986	113.69
Nov. 1, 1985	113.65

Chemical Prices Start on Page 46

Riverside Products Corporation is also increasing bicarb pricing; its increase is effective December 1. New pricing per hundredweight is as follows: USP powdered no. 1 $17.55; no. 1 treated free flowing, [illegible] USP fine granular no. 2, $18.10; no. 3 [illegible] powdered, $17.70; USP granular no. 4, $18.[illegible] USP coarse granular no. 5, $18.55; industrial $17.25. All prices are f.o.b. Cartersville, Ga. freight equalized, in 50 and 100 pound bags [illegible] one ton sacks.

Both producers cite increased operating costs as being behind the increase. Church & Dwight, the largest sodium bicarbonate producer, announced a similar increase in October (CMR, 10/6/86, pg. 33).

VANADIUM CHEMICALS — Strategic Minerals Corporation (Stratcor) is increasing its price for two vanadium chemicals, effective November 1.

Vanadium oxytrichloride is moving to $5.25 per pound from $4.75 per pound. Vanadium tetrachloride in 3,000 pound cylinders is increasing to $8.20 per pound from $[illegible] per pound.

Both prices are f.o.b. Niagara Falls, NY. Stratcor was created on July 1 as the result of the leveraged buyout of Union Carbide's vanadium and tungsten assets.

Foote Minerals and Stauffer Chemical, the two other US producers of vanadium oxytrichloride, have already announced similar price increases. They cited increases in the price of vanadium metal.

METALS & MINERALS

ZINC — Falconbridge Limited has raised its price for "Kidd Creek" Braod high-grade and special high-grade zinc, effective immediately.

Product ahipped to the US will be increased to 50c. per pound (US dollars), up from 47c. per pound, and product sent to Canada will cost 69½c. per pound, up from 85c. per pound.

Prices for prime Western grade and continuous line zinc with controlled lead added ahipped to the US, will be 50½c. per pound (US dollara). Shipments to Canada will be 70c. per pound (Canadian dollars).

Finally, continuous line zinc with aluminum added will cost 50¾c. per pound for shipments to the US (US dollars) and [illegible] per pound for ahipmants to Canada (Canadian dollars).

PRICE HIGHLIGHTS

INORGANICS IN OCTOBER

	OCT. (US $)	SEPT. (US$)
Ammonia, US Gulf, bargea	70-75	70-75
Caustic Soda, US Gulf, railcars	90-100	80-90
Chlorine, US Gulf, tankcars	140-150	140-150
DAP, US Gulf, barges	130-132	130-132
Soda Ash, Green River, Wyo.	73-77	73-77
Sulfuric Acid, S.E., tankcars	55-60	55-60

Prices are in short tons end represent quotations for large buyers.

Repligen Wins Grant From NIH For AIDS Tests

Repligen Corporation, Cambridge, Mass., has been swarded a $1.9 million contract for the production of recombinant proteins for research on a vaccine against Acquired Immune Deficiency Syndrome (AIDS).

The 27 mooth contract was granted by the National Institutes of Health (NIH). Under the contract, which will be administerd by NIH's National Institute of Allergy & Infectious Disease (NIAID), Repligen will supply recombinant proteins aod protein fragments to researchers at NIH and their collaborators.

In commeoting on the award, Repligen's president and chief executive officer, Sandford D. Smith, said, "With this contract, the NIH has recognized our accomplishments in various sreas of AIDS research. Foremost is our ability to produce highly pure recombinant antigenic fragments in large quantities." Accoring to John McGowan of NIAID, this contract makes Repligen the major supplier for government experiments on AIDS vaccines.

Repligen has also submitted the antigenic fragments to the National Cancer Institute (NCI) as part of oogoing collaborative vaccine research being conducted by Repligen, Centocor Inc. (Malvern, Pa.), and NCI's Dr. Robert Gallo, discoverer of the AIDS virus. These fragments are oow being evaluated as possible AIDS vaccine ingredients.

In addition, Repligen supplies other recombinant antigenic fragments to Centocor for use in the first "second-generation" AIDS diagnostic test kil. The kit does not contain inactivated AIDS virus, as do the first-generation kits, aod is presently being considered for approval by the US Food & Drug Administration.

"There are ao estimated 1 million people in the United States alone who are infected with the virus that causes AIDS, and that number contioues to grow. We hope that our ongoing research — including thot conducted under the cootract — will lead to the development of a useful AIDS vaccine," Mr. Smith added.

Repligen Corporation develops and produces biochemical and biocatalytic products for the health care, personal care, and industrial markets.

Drug Bill Pressed

Continued from Page 7

the leadership in biotechnology, there should be no hesitancy on our port to engage in self-help," he added.

However, Justice Department officials as well as the White House budget office are advising the President to reject the package because of the vaccine provision, which would create a no-fault Federal compensation system for injuries coused by childhood vaccinations required to enter school.

Assistant Attorney General John Bolton said the administration la concerned the bill would create a major new compensation program for which "no legitimate notional need has been demonstrated;" would lead to a sharp increase in the role of the Federal judiciary, which would decide injury claims; and it seeks to establish a oew excise tox.

Fifty to 75 children each year out of million vaccinated suffer permanent neurological damage as a result of vaccines, primarily from the pertussis component aimed at whooping cough, according to the American Academy of Pediatrics.

The poteotial for lawsuits has caused tha price of the DPT vaccine to rise from $4 to $11.40 per dose in the last year alone. Insurers are reluctant to underwrita the liability and when they do, the rates are high. Consequently, 12 of the 15 US vaccine manufacturers have dropped out of tha market.

Under tha no-fault aystem envisioned by the bill, without proving that a drug firm waa negligent, a family could ba compensated for medical expenses, rehabilitation expenses, wages lost over a child's lifetime and up to $250,000 for death.

The provisions would also maka changes in tort law to reduce the unpredictability of legal damages against drug companies and protect them if they follow the Federal standards and requirements.

The program would go into effect only if Congress approves an excise tax of 10 cents to $1.50 on vaccine doses through separate legislation next year.

Gallium Arsenide For Sale by Alcan

Alcan Aluminum Corporation has decided to sell Cryscon Technologies, Inc. of Phoenix, Ariz., a manufacturer of gallium arsenide substrates.

Alcan helped to establish the firm in 1984 and has operated it as a wholly owned subsidiary. The decision does not affect Alcan's other investments in the electronics market which includes purified gallium metal and gallium arsenide epitaxial wafer businesses.

"Despite its increasing sales, Cryscon does not meet Alcan's goals at this time for developing business in the electronics market," Timothy C. Tuff, president of Alcan Aluminum Corporation stated. "However, we remain firmly committed to the gallium business."

The company is expanding Epitronics, its epitaxial wafer enterprise in Phoenix, Mr. Tuff says. The expansion includes the purchase of MOCVD reactors, enhancement of existing characterization capabilities, and ao increase in office and production facilities.

Alcan Electronic Materials, the company's gallium business, has also doubled its purification capacity, Mr. Tuff says.

Alcan Aluminum Corporation is a wholly owned US subsidiary of Alcan Aluminum Limited of Montreal.

Gas-Methanol Gets

Continued from Page 3

be about the same as those from gasoline currently used.

The decision was prompted by a petition filed by the Oxygenated Fuels Association asking EPA to remove the conditions. EPA granted the group's petition in April.

"OFA is delighted with EPA's decision," says George Dominguez, executive director of the trade group. "The removal of EI and the other modifications in what has become known as the Du Pont waiver should permit widespread use of the environmentally important alcohol fuel blend."

Mr. Dominguez also points out that the use of Du Pont waiver blend fuels "will permit significant reduction in carbon monoxide and other atmospheric pollutants."

Harry Buchanan, vice-president of Celanese Corporation and OFA chairman, notes that several states, including California, New York, Colorado and Arizona are already exploring the possibilities of using alcohol blends as part of their overall environmental improvement strategy.

"The EPA decision on the Du Pont waiver, by removing the EI restriction, will now enable the states and the nation to benefit from this new fuel," says Mr. Buchanan.

COATINGS & PLASTICS

Continued from Page 41

formance compounds from $12 to $16 per pound to $7.35 to $8.55 per pound.

It has also introduced the first reinforced grade of "Xydar" resin, RC-210. This new grade is said to show superior strength, inherent flame-retardance, and high temperature and chemical resistance.

Dartco spokesmen say that it will provide manufacturers with an alternative, not only to metals and ceramics, but also to expensive specialty plastics, such as polyphenylene sulfide and polyetherimide.

Dartco claims to be the first commercial supplier of injection moldable liquid crystal polymers; the firm's production facilities in Georgia and New Jersey account for a total capacity of 22 million pounds per year.

PLASTICS MATERIALS

PHENOLIC RESINS — Information was missing from last week's article on phenolic resins: Reichhold Chemical Company did not announce a price increase. BTL Specialty Resins Inc., formerly the Specialty Phenolics division of Reichhold Chemical Company, announced an increase last month, before both phenol and phenolic resin increases were rescinded.

POLYETHYLENE — Himont USA Inc. will raise selling prices for its lines of "UHMW" (ultra-high molecular weight) and "YHMW" (very high molecular weight) polyethylene by 5c. per pound effective December 1, the firm announced last week.

List prices for the polymers increased by the same amount on April 1. The list price for UHMW is now $1.00 per pound.

The polymers are used in corrosion and abrasion-resistant applications requiring high strength and durability, such as truck bed liners, gear components and chemical resistant pipes.

POLYSTYRENE — Huntsman Chemical Corporation will be implementing a second polystyrene resin price increase on December 1, the company announced last week, raising selling prices for crystol and impact grades of the resin by 3c. per pound, and those for ignition-retardant and pre-colored specialty grades by 2c. per pound.

The first round of polystyrene price increases, adopted throughout the industry, went into effect on October 1, boosting resin prices by 3c. per pound; higher styrene monomer costs were said to have catalyzed this primarily demand-driven increase.

When additional monomer increases were announced for November, American Petrofina Inc., a subsidiary of Oil & Chemical Company, reacted by announcing a second 3c. per-pound price hike for the polymer, effective November 1.

So far, Huntsman is the only other polystyrene producer to have picked up on this, although all makers of the resin describe both price increases as more than justified by strong demand and almost full capacity utilization, after years of depressed pricing and profitability.

PVC COMPOUNDS — Prices for BP Performance Polymers Inc.'s line of "Blanc" PVC compounds will go up 2.5c. per pound on November 15th, the company announced last week.

The new prices are said to reflect higher resin, plasticizer and lead stabilizer costs.

STYRENE-BUTADIENE LATEX — Responding to higher styrene monomer costs, the Emulsion Polymers Division of Reichhold Chemicals Inc. plans to increase prices for its "Tylac" styrene-butadiene paper coating latexes by 2c. per pound by November 1.

EPA Awards $9MM Contract

ICF Incorporated, a Wasbington, D.C.-based consulting firm, says it has won the first major contract awarded by Environmental Protection Agency's newly created Office of Underground Storage Tanks (OUST). The contract — under which ICF will help this new office develop approaches for reducing the health and environmental risks posed by leaking underground tanks — allows OUST to request more than $9 million worth of work as needed over tha next three years.

"Of tha more than one million underground tanks used to store chemicals and petroleum products in communities across the United States, many are leaking and creating serious health and environmental risks," said James O. Edwards, ICF's chief executive officer. "ICF's task is to provide economic and analytical support to this new office as it develops, analyzes, and implements different approaches to control these risks."

High-Solids More Effective Than Low Solids

High-solids urethane maintenance coatings can reduce application cost up to 3.4 cents a square foot and give better results than their low-solids counterparts, according to a recently released Du Pont Company laboratory and field study.

"Given our findings, new and pending state legislation mandating the use of high-solids coatings to reduce emissions may prove a boon to maintenance paint users," says Walter Kaminski, Du Pont's technical program manager in charge of the study.

"Although high-solids urethanes command up to a 30 percent unit price premium for the paint itself, they are highly cost effective when labor is considered. Our tests showed these coatings took 25 to 35 percent less time to cover test areas."

"The high-solids coating also showed significantly better performance than conventional paints. For instance, it gave better hiding because of high film build, better edge protection because of lower shrinkage, and better appearance due to higher gloss."

VERTICAL PERFORMANCE

The test found that painters can roll 3-to 6-mil-thick applications (wet) of both high and low solids coatings on a horizontal surface. However, on a vertical surface, high-solids still rolled 5 to 6 mils wet, whereas low-solids gave only 4 mils wet.

The study compared the combined material and labor cost of high and low solids urethanes using roller, airless spray and conventional spray methods. The results: application by roller had a cost advantage of 11 cents; airless spray had an advantage of 11 cents; and conventional spray cost the most for both coating types.

The study, which used "Imron" 333, a high-solids polyurethane maintenance coating, was conducted at Du Pont's Marshall Laboratory in Philadelphia and at refinishing and chemical plants in Houston and Gibbstown, N.J.

"Given these findings, why haven't all maintenance paint users adopted high-solids technology? The answer is that without productivity tests, users cannot see past the 'sticker shock' associated with a $75 gallon paint," says Kaminski.

Hercules Inc. Restructures Its Polypropylene Film Operation

A major restructuring of the polypropylene film business of Hercules Incorporated, Wilmington, Del., designed to focus services and marketing efforts on the needs of user industries rather than on the products it offers has been announced by James E. Knox, president of Hercules Engineered & Fabricated Products Company.

The Film Group reorganization involves the formation of separate business units for the tobacco and snack food industries, for diversified industries which include bakery, candy and industrial markets, and for the converter industry which serves end-users in both snack and diversified fields. Each unit reports to David B. Collins, vice president-film.

"A primary purpose of the reorganization is to give companies in important film-using industries their own Hercules teams who are familiar with their needs and committed to their interests," explained Mr. Collins. "These responsibilities were previously spread among different groups when we were structured along product-directed lines."

Each of the new business units will have its own sales staff and responsibilities for product development and technical service for the industries it serves. From an internal standpoint, Mr. Collins said, they become separate profit centers and market-driven businesses.

Heading the new business units are: Richard L. Johnson, director, tobacco industry; William B. Wagamon, director, snack food industry; Joel J. Rolsman, manager, diversified industries; and Ralph H. Dale and Howard H., Taylor, managers, converter industry.

Business manager for the Film Group is Richard H. Hough through whom report managers of international marketing and marketing communications.

The Hercules Film Group producers of oriented polypropylene films for a wide variety of packaging applications. Use areas include tobacco, snack foods, bakery products, candy, pharmaceuticals, personal care products and a number of industrial and overwrap applications.

Morton Thiokol Sees

Continued from Page 9

cated the company might make a large acquisition, but that its financial criteria are stringent. Morton-Thiokol would not accept the high prices and long-term dilution currently observable in the acquisition market, he said.

On the space shuttle program, he said the company has completed a preliminary redesign review with National Aeronautics and Space Administration and that redesign of the shuttle is proceeding faster than expected. The shuttle should be back in space early in 1988, Mr. Locke indicated. Morton-Thiokol's aerospace sales, which were $320 million in fiscal 1986, will decline to $280 million in fiscal 1987 because of the stand-down in the space shuttle program.

Mr. Locke noted that ample revenues and earnings will continue from Morton Thiokol's broad involvement in aerospace, which has included every single strategic missile program the US has ever had.

Another new area of interest is Morton-Thiokol's involvement in the automotive air bag programs being developed by most of the automotive companies, including the American and Japanese auto makers. The airbag has been made standard equipment for Mercedes cars produced in the US, Mr. Locke noted.

In the specialty chemicals business, Morton Thiokol's packaging adhesive resins were reported to be doing exceptionally well. Sales of Adhesives, Cootings & Sealants are expected to grow to $265 million in the current fiscal year from $210 million in fiscal 1988.

The water-based polymer business which Morton Thiokol purchased from Monsanto Company about two years ago, is also performing very well, the analysts were told.

In the electronic chemicals business, Mr. Lockenoted signs of an upturn in the depressed US market for computers, and disclosed that Morton Thiokol and E.I. duPont de Nemours & Co. together have 90 percent of the photo resist market.

Avery Completes Purchase of Uniroyal

Avery Chemical, a subsidiary of Avery Inc., has completed the previously announced acquisition of Uniroyal Chemical Inc. (CMR, 5/10/88, page 9) for approximately $700 million, the firm announced last week.

Uniroyal Chemical Inc., whose recorded sales totalled $569 million last year, develops, makes and sells elastomers and specialty chemicals worldwide.

PERFUMES & FLAVORINGS

Orange Oil Market Unaffected By New Florida Citrus Canker

The discovery of strain-A citrus canker in a trailer park South of Bradenton, Fla., last week caused a stir in the citrus industry. Fears that the damage done by a nursery infection in conjunction with a freeze two winters ago might be repeated were unfounded, however, as experts report only a minor infestation in Manatee County on the state's West Coast.

"The strain-A citrus canker was first detected last June on Anna-Maria island and in a grove in Palmetto," says a scientist with the Division of Plant Industry in Winterhaven, Fla., "so the infestation we picked up last week didn't surprise us." He emphasizes that Manatee County is not part of the major citrus growing areas because of steady residential development.

"The canker was probably there last Spring," concurs an industry observer. "But since they don't have the resources to go door to door, it's likely that other pockets of infestation will turn up in the near future."

Experts explain that the major vehicles for spreading the canker are lawn services which unknowingly work near infected trees. "The virus can be passed on by lawnmowers and equipment that have been used to tend contaminated areas; the clippings shorn on one property are used as mulch on another." Evidence for this has been in the location of the newly detected canker: ground level, or lawnmower height.

REGULATIONS ADEQUATE

Sources agree on the adequacy of state provisions for handling the potentially ruinous virus. "The regulatory program that's in place is sufficient to prevent any further contamination," says one scientist.

Once an infected area is discovered, the affected trees are uprooted and removed in covered trucks to an incineration site. Unaffected trees in close proximity to the tainted ones are severely pruned, or "buckhorned," all the way back to the trunk and then sprayed with a copper sulphate-based solution that kills any remaining virus.

"The size of the citrus industry engenders a scare reaction when someone mentions canker," says a citrus grower, "but this has been monitored closely since it's been discovered."

Another Florida citrus producer notes that market conditions are stagnant due to the pre-harvest timing: "The citrus market is not vibrant at this time of year; there's very limited availability of the valencia or midseason orange oils."

According to an essential oils broker, the freeze two years ago enabled Brazil to secure part of the Florida market. "Brazil has become an important supplier since then. They have established themselves and are being aggressive." The Florida producer agrees: "Midseason is 50 cents to 55 cents per pound f.o.b. Florida but Brazil undersells us at around 85 cents per kilo f.o.b. Brazil."

Other oils, an essential oils importer says, don't compete for the same volume market with the Brazilian and Floridian because they're more specialized products. "The Californian oil doesn't compete head to head with the others because producers there claim higher distillation and recovery costs." Israeli orange oil is also specialized and, though prices for it in the US have dropped 15 cents on a cost and freight New York basis to 72 cents per pound, it is available in such limited quantities that bulk purchasers look elsewhere for their oil.

PRICES TRENDLINES

WEEK ENDING OCT. 31, 1986

CHANGES/UP

Anise seed, Spanish, 2c. per lb.
Anise seed, Turkish recleaned, 8c. per lb.
Bergamot oil, Italian, 50c. per kilo
Cumin seed, Turkish, 3c. per lb.
Fennel seed, Indian, 5-6c. per lb.
Ginger oil, Indian spot, 67 per lb.
Ginger root, Chinese, 2-4c. per lb.
Lemon oil, Italian, 40-50c. per kilo
Ocotea Cymbarum oil, 15c. per kilo
Sesame seed, Central American, 1c. per lb.
Turmeric, Alleppey FAQ 3.00%, 9c. per lb.

CHANGES/DOWN

Basil leaves, Egyptian fancy, 5c. per lb.
Camphor oil, 1,070, 5c. epr lb.
Cinnamon, Mexican, 3" cut, 35c. per lb.
Dill seed, Indian recleaned, 7c. per lb.

PERFUMES INDEX

The Perfumes & Flavorings index reflects the prices of 11 representative materials in this sector and the quantity of each supplied in 1985.

Oct. 31, 1986 .... 71.00
Oct. 24, 1986 .... 71.00
Sept. 26, 1986 .... 71.00
Nov. 1, 1985 .... 71.00

Chemical Prices Start on Page 48

ESSENTIAL OILS

OCOTEA CYMBARUM — Brazilian ocotea cymbarum firmed last week from $5 per kilo f.o.b. Brazil to $5.15 to $5.20 per kilo

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ESSENTIAL OIL IMPORTS: AUGUST

SELECTIVE STATISTICS FROM THE CENSUS BUREAU.

		AUG. '86	JULY '86	YR TO DATE	AUG. '85
Bergamot	lbs.	10,193	9,162	72,932	9,013
Bitter Almond	lbs.	---	---	3,413	16,432
Cassia	lbs.	25,119	46,803	283,371	7,373
Cedarleaf	lbs.	8,000	3,507	15,320	460
Cinnamon	lbs.	---	15,620	62,742	26,632
Citronella	lbs.	270,605	82,343	916,429	33,663
Clove	lbs.	123,135	211,663	901,934	79,382
Cornmint	lbs.	5,424	36,313	182,732	37,665
Eucalyptus	lbs.	74,074	202,978	442,606	33,033
Geranium	lbs.	8,390	5,330	30,367	9,303
Lavendars	lbs.	10,647	6,230	33,443	22,870
Lemon	lbs.	98,403	37,349	1,332,040	155,007
Lemongrass	lbs.	24,000	20,275	33,756	18,000
Lime	lbs.	132,663	131,739	904,644	150,953
Neroli	lbs.	97	43	3,873	18
Nutmeg	lbs.	30,775	7,565	224,111	6,314
Orange	lbs.	242,726	290,423	6,139,118	559,462
Orris	lbs.	132	37	2,043	26
Patchouli	lbs.	100,727	66,367	623,616	33,674
Peppermint	lbs.	14,821	---	78,246	1,190
Petitgrain	lbs.	27,833	25,633	198,083	33,362
Pine Needle	lbs.	1,618	12,066	21,778	9,970
Rose	lbs.	7,268	1,627	68,650	3,768
Rosemary	lbs.	4,410	2,753	38,331	15,886
Sandalwood	lbs.	1,344	7,598	97,076	6,815
Thyme	lbs.	2,332	884	13,035	9,081
Vetivert	lbs.	22,124	22,037	36,777	25,984
Ylang Ylang or Cananga	lbs.	7,024	3,964	51,360	5,724

CHEMICAL PRICES

WEEK ENDING OCT 31, 1986

This chemical prices section contains spot quotations and/or list prices of suppliers of chemicals and related materials on a New York or other indicated basis. The listings are based on price information obtained from suppliers. Note that posted prices do not necessarily represent levels at which transactions actually may have occurred. They do not represent bid and asked prices, nor a range of prices over the week. Price ranges may represent quotations of different suppliers as well as differences in quantity, quality and location. All matters under this heading are fully covered by copyright.

An index of weekly chemical market reports is on the back cover.

A

Abies alba, dms. .... kilo	25.00	27.00
Acetaldehyde, 99%, tanks, frt alld lb.	.37	–
Prices 1c higher in West.		
Acetaminophen (see N-Acetyl-p-aminophenol)		
Acetanilide, tech, flaked, bgs, t.l., f.o.b. works .... lb.	1.29	–
Acetic acid, tech, tanks, divd. E ... lb.	.25	–
Acetic anhydride, tanks, divd. E ... lb	.43½	–
Acetic anhydride prices 1c higher in West.		
Acetoacetanilide, dms, t.l., divd. .. lb.	1.29	–
Acetoacet-o-anisidide, dms., t.l., divd. .... lb.	2.70	–
Acetoacet-o-chloroanilide, dms., t.l., divd. .... lb.	2.95	–
Acetoacet-o-toluidide, dms., t.l., divd. .... lb	1.56	–
Acetoacet-m-xylidide, dms., t.l., divd .... lb	3.33	–
Acetone, tanks, divd E .... lb.	.25	–
divd Zone 2 (Calif.) .... lb.	.27	–
divd Zone 3 (W of Rockies excluding Calif.) .... lb	.27	–
Acetonitrile, tanks, frt. alld. .... lb	.53	.54½
Acetophenetidin (see Phenacetin).		
Acetophenone, tech., tanks, f.o.b works .... lb	.76	.85
perfume grade, extra, cns .... lb.	2.15	–
N-Acetyl-p-aminophenol, c.l., t.l. works. .... kilo	5.65	5.64
Acetylene black, imp., 50% compressed, 12½-lb bgs. c.l, t.l. frt. extra .... lb	.96	–
100%, 25-lb bgs., same basis .... lb	.95½	–
Acetylene tetrabromide, tanks, f.o.b works .... lb.	.97	–
Acetylsalicylic acid, USP (see Aspirin)		
Acetyltributyl citrate, bulk, f.o.b works .... lb.	1.28	–
Acetyltriethyl citrate, bulk, f.o.b. works .... lb	2.06	–
Acrolein, tech, tanks, works .... lb.	.82	–
Acrylamide, solid, t.l. works .... lb.	1.00	–
soln., 100% basis tanks, works .. lb.	.74	.77
Acrylic acid, glacial, reg., tanks, divd .... lb.	.67	–
tech, tanks, frt. alld .... lb.	.60	–
Acrylonitrile, tanks, works .... lb.	.39½	.45½
Acrylonitrile-butadiene-styrene resin, high-impact, nat., t.l., dms., divd .... lb.	1.09	1.12
medium-impact, nat, same basis lb.	1.05	1.09
low-impact, nat, same basis .... lb	.98	1.01
Adipic acid, resin grade, bulk, hopper cars, frt equald .... lb.	.57	–
bgs., t.l., c.l. frt. equald. .... lb.	.59	–
Agar USP, powd., 60 to 100 mesh., dms. .... lb.	9.50	9.85
Alcohol, syn C-8 to C-10, tanks, f.o.b. works .... lb.	.38	–
C-12 to C-13, tanks, divd .... lb	.57	.59
C-14 to C-15, tanks, divd .... lb.	.57	–
C-16 to C-18, tanks, divd .... lb	.50	–
Aldehyde, C-6, dms. .... lb	4.10	5.70
C-7, dms .... lb.	1.95	–
C-9, dms .... lb.	4.30	8.30
C-10 dms .... lb.	4.30	5.35
Algin (see Sodium alginate)		
Alkali blue, dry, flushed, 110-lb. dms. divd .... lb.	3.72	3.83
Alkali blue prices 1c. higher W. of Rockies.		
Allspice Guatemalan / Honduran, bgs .... lb.	.87	–
Jamaican, bgs .... lb.	1.05	–
Allyl alcohol, tanks, f.o.b., Bayport, Tex. .... lb.	.90	–
Allyl bromide, 500-kilo dms. 2,000 lbs. or more, works .... lb.	5.50	–
Allyl caproate, 25-lb. cns. .... lb.	3.90	4.50
Allyl chloride, tanks, f.o.b. works .. lb.	.65	–
Allyl isothiocyanate, bots. .... lb.	5.40	6.90
Almond oil, artif., bitter (see Benzaldehyde.)		
Almond oil, nat. bitter, NF f.f.p.a. bots. .... lb.	3.50	3.50
sweet .... lb.	1.24	1.50
Aloe, Cape, cs. .... lb.	2.00	–
powd., cs. .... lb.	2.25	2.75
Curacao, kgs. .... lb.	2.60	–
powd., kgs .... lb.	3.00	–
Aloin, NF, dms .... lb.	5.00	8.70
Alum, ammonium, tech. gran., bgs., c.l., t.l., works .... 100lb.	85.00	–
FCC powd., fiber dms., works 100lbs.	55.00	–
Alum, potassium, tech. gran. bgs., c.l., t.l., works .... 100 lbs.	35.00	–
FCC powd. fiber dms., works. 100 lbs.	55.00	–

Alumina, activated, gran., 100-lb. bgs., 40,000-lb. min. c.l., works. ton	821.00	–
calcined, bulk, same basis .... ton	354.00	–
100-lb. bgs., same basis .... ton	390.00	–
hydrated, white, bulk, same basis .... ton	190.00	–
100-lb. bgs., same basis .... ton	224.00	–
Aluminum acetate, basic, dms, t.c.l., works .... lb.	3.25	–
Aluminum chloride, anhyd., soln., 500-600 lb. dms., c.l, t.l., works, frt. equald .... lb.	.53	–
bulk, same basis .... lb.	.49	–
semi-bulk bins, same basis .... lb.	.52	–
Aluminum chloride, coml., soln., 32° tanks, works .... 100 lbs.	15.00	–
ret. dms., c.l., works .... 100 lbs.	12.00	–
non-ret. dms., same basis . 100 lbs.	20.00	–
Aluminum formate, dibasic, liq. 9% Al_2O_3 t.l., works .... lb.	.55	–
Aluminum hydrate (see Alumina, hydrated)		
Aluminum hydroxide, dried, gel, NF, 75-lb. dms., c.l., t.l., works. lb.	2.75	3.50
Aluminum metal, 99½% or more, 50-lb. pigs., 30,000-lb. lots, frt. alld .... lb.	.78	–
Aluminum oxide amorphous (see Alumina, calcined).		
Aluminum paste, leafing grade, std., lining, 2,400 lb. lots, divd .... lb.	1.40	–
lining, extra-fine, same basis .... lb.	1.99	2.14
Aluminum phenolsulfonate, purif., 100-kilo dms., t.l. .... kilo	5.46	–
Aluminum powder, leafing grade, std. lining, 2,400 lb. lots, divd. . lb.	3.17	–
extra fine, lining, same basis .... lb.	4.04	–
Aluminum stearate, bgs., c.l. .... lb.	1.25	1.36
Aluminum sulfate, coml., grd., 100 lb. bgs., c.l., works, frt. equald., basis 17% Al_2O_3 East and Gulf Coasts .... ton	205.00	–
West Coast .... ton	220.80	–
liq., tanks, N.E. same basis .... ton	145.00	–
iron-free, dry, bgs., c.l. same basis .... ton	300.00	–
liq., tanks, same basis .... ton	225.00	265.00
Aluminum sulfate, USP, gran., dms. lb.	–	.337
Aminoacetic acid, USP, dms., 20,000 lbs, f.o.b. works .... lb.	2.12	–
tech., t.l., same basis .... lb.	1.88	–
p-Aminobenzoic acid, 1,000 kilos or more, dms., f.o.b. works, kilo	8.60	10.10
2-Amino-4-chlorophenol dry and grd., 14,000 lbs. or more, frt. alld. lb.	5.79	–
Aminoethyl ethanolamine, tanks, frt. collect .... lb.	1.33½	–
N-Aminoethyl piperazine, tanks, f.o.b., frt. collect .... lb.	1.05	–
2-Amino-2-ethyl-1,3-propanediol dms., t.l. f.o.b. works .... lb.	1.82	–

2-Amino-2-methyl-1-propanol, 95%, dms., c.l., t.l., f.o.b. works . lb.	.95	–
tanks, f.o.b. works .... lb.	.69	–
o-Aminophenol, dms., f.o.b. Charlotte, N.C. .... lb.	3.95	–
p-Aminophenol, t.l. dms., f.o.b. Raleigh, N.C. .... kilo	7.15	–
p-Aminosalicylic acid, USP, 50-kilo dms., t.l. .... kilo	19.50	–
Ammonia, anhyd., fertilizer, wholesale, tanks, divd. Midwest terminals .... ton	185.00	170.00
tankcars, f.o.b. Gulf Coast ... ton	90.00	85.00
aqueous, 29.4% NH_3, anhyd. basis, tanks, frt. equald. E. of Rockies .... ton	280.00	315.00
Ammoniacal liquor (see Ammonia, aqueous).		
Ammoniac sal, galvanizing grade, bgs., c.l., f.o.b. works 100lbs	28.80	–
Ammoniac sal, white (see Ammonium chloride coml.).		
Ammonium biborate, gran., dms., c.l. works .... lb.	.90	–
Ammonium biborate powder 15c. per lb higher.		
Ammonium bicarbonate, 300-lb. fib. dms., c.l., works .... 100 lbs.	29.00	–
bgs., c.l. .... 100 lbs.	25.00	–
Ammonium bichromate, photo-litho grade, gran. 100-lb. dms., t.t.l. works .... lb.	2.00	–
Ammonium bifluoride, bgs., t.l., works .... lb.	.70	–
Ammonium bromide, dom. NF, gran., dms., c.l., t.l., f.o.b. works . lb.	1.31	–
Ammonium chloride, white, tech., fine gran., bgs., c.l., works .... 100lbs.	16.00	–
USP, gran., dms. .... lb.	.40	.53
Ammonium citrate, dibasic, 250-lb. dms. f.o.b. works .... lb.	2.79	–
Ammonium dimolybdate, approx. 85%, 24,000 lbs. or more . lb.	5.48	–
Ammonium fluoborate, tech., dms., c.l., t.l., works, frt. equald. . lb.	1.79	–
Ammonium heptamolybdate, cryst., dms., 24,000 lbs. f.o.b. works .... lb.	5.57	–
Ammonium lauryl sulfate, tanks, f.o.b works .... lb.	.28	.32
Ammonium lignin, sulfonate, bulk, f.o.b. Hoquiam, Ore. .... ton	72.00	–
Ammonium nitrate, dom., fertilizer grade, 33.5% N, bulk, S.E. divd .... ton	130.00	135.00
Ammonium oxalate, tech., fine. gran. 300-lb. dms., t.l., f.o.b. works .... lb.	1.42	1.58
Ammonium pentaborate gran. bgs., c.l., works .... lb.	.75	–
Ammonium pentaborate powder 20c. per lb. higher.		
Ammonium persulfate, 225-lb. dms., 24,000 lbs. or more, f.o.b. works .... lb.	.58	–
56-lb. bgs., same basis .... lb.	.58½	–
Ammonium phosphate (see Di- and monoammonium phosphates).		
Ammonium silicofluoride, dms c.l., t.l., works .... lb.	.30¾	–
Ammonium sulfate, lg. gran., bulk, c.l., works .... ton	60.00	90.00
std., coml., bulk, f.o.b. works .. ton	60.00	70.00
tech., bgs., c.l., t.l., works .... ton	108.00	120.00
Ammonium sulfide, liq., 40-44% tanks, 100% basis, frt. equald. .ton.	460.00	–
Ammonium sulfocyanide, tech. (see Ammonium thiocyanate).		
Ammonium thiocyanate, tech, cryst., bgs., c.l., works .... lb.	1.02	–
tech soln., 50%, tanks, frt. equald. .... lb.	.93	–
Ammonium thiosulfate, photographic, 60%, tanks, f.o.b. works .. lb.	.13	–
Ammonium zirconyl carbonate, soln., bulk .... lb.	.72	–
Amyl acetate, primary mixed isomers, tanks, divd. .... lb.	.57	–
Amyl alcohol, primary mixed isomers, tanks, frt. alld .... lb.	.49½	–
Amyl cinnamic aldehyde, dms. .... lb.	2.35	2.50
p-tert-Amylphenol, bulk, works .... lb.	.91	1.03
Amyris oil, dms. .... lb.	11.00	–
Anethole, tech., dms. .... kilo	10.20	–
USP, dms. .... lb.	3.85	4.60
Angelica root oil, bots. .... kilo	700.00	–
Aniline, tanks, f.o.b. .... lb.	.33	.35½
Anise oil, dms. .... kilo	9.90	–

Anise seed, Chinese, bgs .... lb.	1.30	–
Spanish, bgs. .... lb.	1.10	–
Turkish, bgs. .... lb.	1.08	1.13
Anisic aldehyde, cns, dms .... lb.	4.80	5.10
o-Anisidine, imp., dms., divd. .... lb.	2.27	–
p-Anisidine, imp., cast solid, dms., works .... lb.	1.90	–
flakes, same basis .... lb.	2.25	–
Anthranilic acid, purif., 99% min., dms., t.l., frt. alld .... lb.	1.70	–
Antimony fluoborate, liq. conc., 175-lb. dms., t.l., works .... lb.	3.02	–
Antimony metal, bulk, c.l., mines .. lb.	1.36	1.39
Antimony oxide, high-tint, bgs., c.l., frt. alld. E. of Rockies .... lb.	1.35	1.50
Antimony trichloride, anhyd., solid, dms., t.l. works .... lb.	3.80	–
Apomorphine hydrochloride, NF, bots., ... gm.	15.00	–
Apricot kernel oil, dms .... lb.	2.05	–
Arabic gum, powd., bbls. .... lb.	1.85	2.15
spray dried .... lb.	2.00	2.50
USP grade .... lb.	6.75	9.25
Aromatic petroleum solvents (see Solvent, naphtha, petroleum, aromatic).		
Arsenic, crude (see Arsenious trioxide).		
Arylid, red (see Napthol, arylid red).		
Arsenious trioxide, 99%, bulk, c.l., f.o.b. warehouse .... lb.	.42	.43
Asbestine (see Talc, fibrous).		
Ascorbic acid, USP, 100 kilos, divd .... kilo	9.00	10.50
Ash, black (see Barium sulfide).		
Asphalt gilsonite, (see Gilsonite).		
Asphalt petroleum cutback, tanks, E. Coast .... gal.	.86	–
emulsion, tanks, tankwagons, E. Coast .... gal.	.68	–
steam-refined, 40-300 penetration, tanks, tankwagon .... ton	170.00	–
steeproofing grade, bulk tankwagon .... ton	175.00	–
Aspirin, USP, cryst., powd., 250-lb. dms., c.l., f.o.b. .... lb.	1.95	–
10% starch granulation, white, 250-lb. dm, c.l., f.o.b. .... lb.	1.97	–
18% starch granulation, white, same basis .... lb.	2.60	–
Freight equald. shipt. identical quantity over standard route from N.Y., Phila., Midland, Mich., Chicago and St. Louis.		
Atropine sulfate, USP, bots. .... oz.	10.00	11.00
Avocado oil, dms. .... lb.	4.00	4.50
Azelaic acid, tech., 50-lb bgs., t.t., c.l., divd .... lb.	1.23	–
Azo orange, bbls., divd .... lb.	4.60	–
Azo yellow, 10 G, bgs., divd. E. of Rockies .... lb.	4.40	–
Azo O yellow pigment, bgs., same basis .... lb.	2.45	–

B

Bacitracin, USP, non-sterile, one billion units or more ... million units	5.30	6.15
Barbital, NF, 50-kilo dms., divd. .. kilo	22.50	–
Barbital-sodium, NF, 50-kilo dms. divd .... kilo	23.00	–
Barite, dry-grd., Southern, off-color, coarse, bgs., c.l., f.o.b mines lb.	.09	.11
water-grd., white, bgs., c.l., f.o.b. works .... lb.	.13	–
unbleached, extra-fine, pigment grade, c.l., f.o.b. works .. ton	160.00	–
Barium carbonate, precip., bulk, c.l. works, frt. equald. .... lb.	.25	–
bgs., same basis .... lb.	.25½	–
photo grade, bgs., same basis ton	510.00	–
Barium chlorate, 100-lb. dms., 1-10 dm. lots, works .... lb.	1.04	–
Barium chloride, tech., cryst., bgs., c.l., works .... ton	470.00	–
anhyd. drums c.l., same basis. ton	590.00	–
Barium chloride, purif., cryst. 400-lb. dms., works .... lb.	3.76	–
Barium monohydrate, 55-lb. bgs., c.l., t.l. f.o.b. works .... 100 lbs.	46.00	–
octahydrate, cryst., bgs., same basis .... 100 lbs.	33.00	–
Barium nitrate, 100-lb. bgs., t.l., works .... 100lbs.	32.50	–

ABBREVIATIONS

THE TERMINOLOGY OF THE CHEMICAL MARKETPLACE

a/alpha
alld./allowed
amorph./amorphous
AMP/American melting point
anhyd./anhydrous
AOAC/Association of Official Agricultural Chemists
a.p.a./available phosphoric acid
approx./approximately
artif./artificial
ASTM/American Society for Testing & Materials

b/beta
Be/Baume
bbls./barrels
b.g./beta-gamma
bgs./bags
bls./bales
bots./bottles
b.p./boiling point
b.p.l./bone phosphate of lime
b.r./boiling range
bxs./boxes

C./Centigrade
cbys./carboys
c.c./cubic centimeters
CD/completely denatured
c.i.f./cost insurance freight
c.l./carload
cns./cans
coml./commercial
conc./concentrated
cp/chemically pure
cps./centipoises
cryst./crystalline
cs./cases
ctns./cartons
cyls./cylinders

d-/dextro
dbl./double
denat./denatured
dest.-dist./destructively distilled
dl/dextro-laevo
dist./distilled
distr./distributor
divd./delivered
dms./drums
dom./domestic

E/East
e.p./end point
equald./equalized
exp./expressed
extr./extracted

F./Fahrenheit
f.a.s./free alongside
ferment./fermentation
f.f.a./free fatty acid
f.f.c./free from chlorine
f.f.p.a./free from prussic acid
fib./fiber
f.o.b./free on board
f.p./freezing point
frt./freight

g-/gamma
gal./gallon
g.p./general purpose
gran./granular
grd./ground

i.b.p./initial boiling point
imp./imported

incl./included
indust./industrial

kgs./kegs

l-/laevo
lb./pound
l.c.l./less carload
l.t.l./less truckload
liq./liquid

m-/meta
m.a.p./mixed aniline point
mcg./microgram
mfrs./manufacturers
min./minimum
molt./molten
m.p./melting point

N/nitrogen
n-/normal
nat./natural
neut./neutral
NF/National Formulary
No./number
Nom./nominal

o-/ortho
ord./ordinary
oz./ounce

P/phosphorus
p-/para
Pac./Pacific
pf./proof
phos./phosphate
photo/photographic
pkgs./packages
powd./powdered
precip./precipitated
prod./producer
pt./point
pulv./pulverized
purif./purified

redist./redistilled
refd./refined
refy./refinery
resub./resublimed
ret./returnable

SD/specially denatured
s.d./single distilled
SE/Southeast
sec./secondary

secs./seconds
sp.g./specific gravity
shipt./shipment
soln./solution
std./standard
syn./synthetic

tanks/railroad tankcars
tech./technical
tert./tertiary
t.l./truckload
ton/refers to short ton of 2,000 pounds
TVA/temporary voluntary allowance
t.w./tankwagons

USP/United States Pharmacopeia

vis./viscosity
VM&P/varnish makers & painters

W/West
whse./warehouse
w.w./water-white

NOTE: A unit-ton is 1 percent of 2,000 pounds of the basic constituent or other standard of the material. The percentage figure of the basic constituent multiplied by the unit-ton price shown in Chemical Marketing Reporter gives the price of 2,000 pounds of the material.

Barium oxide, grd., dms., c.l. divd .... 100 lbs.	31.25	–
tote bins, same basis .. 100 lbs.	30.00	–
Barium peroxide, 700-lb. dms., c.l., t.l., works .... lb.	.30	–
Barium stearate, bulk, t.l., f.o.b. dest .... lb.	1.05	–
Barium sulfate, tech. (see Barite and Blanc fixe).		
Barium sulfate, USP, X-ray diagnosis grade, powd., 25 kilo bgs., 10,000 kilo lots .... lb.	.56½	–
Barium sulfide (black ash), dms., c.l., works .... ton	480.00	–
Basil Egyptian .... lb.	.97	.90
French .... lb.	.89	.90
Basil oil, Comores .... lb.	55.00	–
Basil oil, Egyptian .... lb.	62.00	–
Battery acid, t.l., f.o.b., works .... ton	52.00	70.75
Bauxite, calcined, refractory grade, 87%-88% Al_2O_3, Baltimore & Mobile .... metric-ton	229.28	–
Bayol, NF, 50-55%, dms. .... lb.	11.00	–
Bayberry wax, bgs. .... lb.	2.70	3.00
Beeswax, refd., bleached white, bricks, 100-lb. ctns. .... lb.	3.10	3.20
white, slabs, 100-lb. ctns. .... lb.	3.05	3.10
yellow, bricks, 100-lb. ctns. .... lb.	3.00	3.10
yellow, slabs, 100-lb. ctns. .... lb.	2.95	3.05
Bentonite, dom., c.l. bags, f.o.b. works .... ton	43.50	–
Benzaldehyde, NF, dms. .... lb.	1.25	–
tech., dms., c.l., t.l. .... lb.	.73	.83
Prices are 4c. per lb. higher West of the Rockies.		
Benzene, indust. or nitration, barges, f.o.b.		
Baton Rouge, La. .... gal.	.87	–
Baytown, Tex. .... gal.	.87	–
Beaumont, Tex. .... gal.	.87	–
Catlettsburg, Ky. .... gal.	.95	–
Chicago district .... gal.	.87	–
Chocolate Bayou, Tex. .... gal.	.87	–
Clairton, Pa. .... gal.	.97	–
Corpus Christi, Tex. .... gal.	.87	–
Deer Park, Tex. .... gal	.87	–
Houston district, spot .... gal.	.85	.87
Lima, Ohio .... gal.	.90	–
Wood River, Ill. .... gal.	.87	–
Benzene hexachloride, 99% gamma isomer (see Lindane).		
Benzidine orange, powd., bgs., divd. lb.	4.90	8.70
liq. containers, divd .... lb.	3.36	3.69
Benzidine yellow, AAA, bgs., divd. . lb.	5.80	8.05
AAOA, bgs., divd .... lb.	7.35	7.40
AAOT, bgs., divd. .... lb.	5.95	6.20
Benzocaine, USP, dms., 1,000 kg. lots, f.o.b., works .... kg.	10.00	11.50
Benzohydropyrone, dms. .... lb.	12.50	–
Benzoic acid, tech, bgs., c.l., t.l., f.o.b. works .... lb.	.55	.58
USP cryst., dms., ton lots same basis .... lb.	1.73	1.75
Benzoin gum, Sumatra, cs. .... lb.	1.60	–
Benzophenone, N.F., 1,000 lbs. or more, f.o.b. .... lb.	3.50	3.60
N.F. 1,000 kilos or more, f.o.b. .... kg.	7.45	–
tech, 1,000 kilos or more, fob works .... kgs.	4.35	–
2,2-Benzothiazyl disulfide (see Mercaptobenzothiazyl disulfide).		
Benzotriazole, flake, dms., 1,000 lbs. or more, f.o.b. works .... lb.	5.10	–
powd., dms., 1,000 lbs. or more, same basis .... lb.	8.20	–
photo-grade, dms., 1,000 lbs. or more, same basis .... lb.	9.90	–
Benzotrichloride, refd., dms. t.l., frt. equald .... lb.	.97	–
tanks, frt. equald .... lb.	.90	–
Benzoyl chloride dms., c.l., works .. lb.	.57	.59
tanks, frt. equald .... lb.	.74½	.75
Benzoyl peroxide, regular gran., 10,000-lb. lots or more, bgs., works, frt. equald. .... lb.	2.35	6.69
paste, 50% and 55% formulations, dms., pails, frt. equald. .... lb.	1.71	1.95
Benzyl acetate, dms. .... lb.	1.20	2.60
Benzyl alcohol, N.F. t.l. dms. frt. equald .... lb.	1.29	1.95
tanks, same basis .... lb.	1.37	1.43
photo grade, t.l., dms., same basis .... lb.	1.40	–
tanks, same basis .... lb.	1.34	–
tech grade, t.l., dms., same basis lb.	1.32	–
tanks, same basis	1.26	–
Benzyl benzoate, dms. .... lb.	1.85	2.25
Benzyl chloride, tech., non-ret. dms., c.l., t.l., frt. equald .... lb.	.59	–
tanks, f.o.b.	.54	–
Benzyl cinnamate, 25-lb. cns. .... lb.	8.50	8.95
n-Benzyl-N,N-dimethylamine, t.l., dms., f.o.b. works .... lb.	2.30	–
Benzyl formate, dms. .... lb.	10.50	–
Benzyl-m-cresol (see Mono-tert-butyl-m-cresol).		
Benzyl isoeugenol, dms. .... lb.	15.50	–
Benzyl propionate, dms. .... lb.	3.35	–
Benzyl salicylate .... lb.	2.90	3.25
Benzylidene acetone, cns., bots. .... lb.	2.95	3.25
Bergamot oil .... kilo	44.75	–
beta-Hydroxynaphthoic acid (see b-Oxynaphthoic acid).		
Betain cryst. 500 gms. or more .... gm.	5.50	–
Biphenyl (see Diphenyl).		
Bismuth nitrate, purif., cryst., 100-lb dms., frt. equald. .... lb.	10.00	–
Bismuth oxychloride, 100-lb. dms., works .... lb.	17.20	–
Bismuth subcarbonate, USP, medium powd. 225-lb. dms., works. lb.	15.31	15.50
Bismuth subgallate, purif., 100-lb. dms., works .... lb.	10.50	–
Bismuth subnitrate NF, powd., 200-lb. dms., works .... lb.	14.45	–
Bismuth subsalicylate, purif. powd., 50-100 lb. dms., works .... lb.	17.00	–
Bismuth trioxide, reagent. powd., 100-lb dms., works .... lb.	15.00	15.45
Bisphenol-A, epoxy grade, hopper cars, divd .... lb.	.57	–
polycarbonate grade, same basis lb.	.71	–
[illegible], syn., imp., bags .... lb.	.20	–
Bois de rose oil, Braz., dms .... lb.	8.75	–
[illegible] toner (red 48) dms., frt. alld. .. lb.	7.25	8.05
(red 52) dms., same basis .... lb.	8.50	7.90
Bonemeal, steamed, dom., bgs. c.l. f.o.b. Midwest plants .... ton	190.00	190.00
Bone phosphate, defluorinated of lime (see Defluorinated phosphate).		
Bone phosphate, precip. (see Calcium phosphate tribasic).		
Borax, tech. anhyd. 99%, bgs., c.l., works .... ton	847.00	–
bulk, c.l., works .... ton	602.00	–

Borax, tech., gran., decahydrate, 99½% bgs., c.l., works .. ton	237.00	–
bulk, c.l., works .... ton	192.00	–
tech., pentahydrate, gran. 99½%, bgs., c.l., works. .... ton	255.00	–
bulk, c.l., works .... ton	220.00	–
Borax, NF (See Sodium borate).		
Boric acid, tech., gran., 99.8%, bgs., c.l., works .... ton	514.00	–
bulk, c.l., works .... ton	599.00	–
Boron trichloride, CP, 1,800-lb. cyls., works .... lb.	3.80	–
Boron trifluoride, 60-lb. cyls., t.l., f.o.b. works .... lb	4.03	–
bulk, same basis .... lb.	3.47	–
Boron trifluoride, etherate, 500-lb. dms., t.l., f.o.b., works .... lb.	2.35	–
phenolate, 500-lb. dms., t.l., same basis .... lb.	1.65	–
Bromine, dms., t.l., works .... lb.	.97	–
bulk, 45,000-lb. min., works .... lb.	.33	.34½
purif., t.l., divd. .... lb.	.75	–
Bromine divd., prices for dms. and bulk shipped W. of Rockies, 1c.-per-lb. higher. Bulk t.l. prices 1c. to 2½c.-per-lb. higher for 30,000-lb. min. and 4c. to 5½c.-per-lb. higher for 15,000-lb. min.		
Bromochloromethane, dms., c.l., f.o.b. Midland .... lb.	1.12	–
Butadiene, tanks, f.o.b. .... lb.	.12½	.13
1,4-Butanediol, tanks, f.o.b., frt. equald .... lb.	.90	–
dms., same basis .... lb.	.99	–
Butene-1, tanks, f.o.b. works .... lb.	.26	.29
n-Butyl acetate, syn., tanks, frt. alld. lb.	.52½	–
n-Butyl acrylate, tanks, frt. alld. E. .. lb.	.99	–
n-Butyl alcohol, syn., ferment, tanks, frt. alld .... lb.	.34	–
sec-Butyl alcohol, syn., tanks, divd. lb.	.365	–
tert-Butyl alcohol, syn., tanks, divd. E. .... lb.	.70	–
Butyl aldehyde (see Butyraldehyde)		
Butyl benzyl phthalate, tanks, frt. alld .... lb.	.59	–
Butyl chloride, tanks, works .... lb.	.69	1.00
Butyl cyclohexyl phthalate, tanks, divd .... lb.	.74	–
n-Butyl ether, dms., c.l., t.l., works .. lb.	1.95	–
Butyl isodecyl phthalate, tanks, divd .... lb.	.35	–
n-Butyl lactate, tanks, f.o.b. works . lb.	1.58	–
n-Butyllithium, 15% soln., 1,000-lb. lots or more, cyls., 100% basis, divd .... lb.	15.45	–
tanks, 3,000-lb. min., 100% basis, divd .... lb.	14.75	–
Butyl methacrylate, tanks, frt. equald .... lb.	.86	–
Butyl octyl phthalate, tanks, divd E. .... lb.	.40	.42
Butyl oleate, dist., dms., c.l. .... lb.	.70	.62
tanks .... lb.	.60	.75
p-tert-Butylphenol, tanks works .... lb	.70	–
Butyl phthalate (see Dibutyl phthalate).		
Butyl stearate cosmetic, dms., 77 dms. or more .... lb.	.91	.97
tanks .... lb.	.92	–
Butyl stearate tech., t.l. .... lb.	.60	.52
tanks .... lb.	.55	.59
Butylamine (see Mono-, Di- and Tributylamine).		
tert-Butylamine, dms., c.l., t.l., f.o.b. works .... lb.	1.31	–
tanks, same basis .... lb.	1.17	–
Butylated hydroxyanisole, food grade, dms., divd .... lb.	9.90	9.85
Butylated hydroxytoluene, food, feed grades, c.l., t.l., bgs., divd .. lb.	1.24	1.30
tech, bgs., c.l., t.l., divd. .... lb.	1.24	1.30
1,3-Butylene glycol, tanks, divd .... lb.	.72	–
Butyraldehyde, tanks, divd .... lb.	.29½	.38
Butyric acid, tanks, frt. alld .... lb.	.44½	–
Butyric ether (see Ethyl butyrate).		
Butyrolactone, tanks, f.o.b. plant ... lb.	1.20	–
n-Butyronitrile, dms., c.l., divd .... lb.	.93	–
tanks, divd .... lb.	.54	–

C

Cadmium chloride, purif., cryst., 100-lb. dms., t.l., works .... lb.	3.73	–
Cadmium, CP, red, dark shade, bbls., 100-lb. lots, frt. alld., E. of Rockies .... lb.	11.33	19.35
light shade, bbls., same basis ... lb.	9.18	12.09
medium shade, bbls., same basis lb.	10.99	15.20
medium-light shade, bbls., same basis .... lb.	10.29	14.50
Cadmium, CP yellow, all shades, bbls., 100-lb. lots, frt. alld., E. of Rockies .... lb.	5.10	7.07
Cadmium fluoborate, liq. conc., dms., t.l., works, frt. equald .... lb.	2.27	–
medium-light shade, bbls., same basis .... lb.	3.22	–
Cadmium-mercury lithopone, maroon shade, bbls., frt. alld. E. of Rockies .... lb.	4.90	–
Cadmium metal ingots or sticks, ton lots, cs., divd .... lb.	1.20	1.60
Cadmium nitrate, purif., flake 400-lb. dms., c.l., t.l., f.o.b. ship. pt. lb.	2.10	–
Cadmium-selenide-lithopone, orange, light shade, bbls., 400-lb. lots frt. alld. E. of Rockies .... lb.	3.97	4.00
deep shade, bbls., same basis ... lb.	4.47	4.50
Cadmium-selenide lithopone, red, dark shade, bbls., same basis. . lb.	9.77	9.80
light shade, bbls., same basis .... lb.	5.27	5.30
medium light shade, bbls., same basis .... lb.	5.72	5.75
medium shade, bbls., same basis lb.	6.37	6.40
maroon shade, bbls., same basis lb.	7.47	–
Cadmium-selenide lithopone, yellow, all shades, bbls., same basis. . lb.	2.97	3.00
Cadmium sulfate, 50-lb. dms., any quantity, f.o.b. ship. pt. ... lb.	4.05	–
Caffeine, dom., USP, syn. cryst. anhyd., powd., 100-lb. dms., c.l., t.l., frt. alld .... lb.	4.80	–
imp., cryst., anhyd., powd., dms., 10,000 lbs. or more .... lb.	4.70	4.95
Calamine, USP, dms. .... lb.	1.60	1.70
Calamus oil, dms. .... lb.	26.60	35.00
Calciferol, (see Ergocalciferol).		
Calcium acetate, purif., powd., dms., t.l., works .... lb.	.87	–

Calcium carbide, std., generator size, bulk, c.l., f.o.b., works,... ton	402.00	–
Calcium carbonate, pulverized, 325-mesh, bgs., bulk, f.o.b. works .... ton	46.00	–
slurries, 54% solids, same basis .... ton	97.00	100.00
72% solids, same basis ... ton	109.27	–
quicklime, gran., ind., bulk, works .... ton	100.93	–
Calcium carbonate, coated, bgs., c.l., works .... lb.	.0830	.1600
Calcium carbonate, precip., bgs., c.l., t.l. .... ton	365.00	445.00
Calcium carbonate precip. medium, bgs., c.l., works .... ton	110.00	150.00
precip. dense. bgs., c.l., surface treated, bgs., c.l., works .. ton	265.00	–
ultrafine, USP, bgs., c.l., works .... ton	217.00	225.00
Calcium chloride, conc., reg. grade. 77-80%, flake, bulk, c.l., works .... ton	153.00	–
100-lb. bgs., c.l., same basis .... ton	196.00	–
anhyd., 94-97%, flake or pellet. bulk, c.l., same basis .... ton	217.00	–
80-lb. bgs., c.l., same basis .. ton	279.00	–
brining grade, 80-lb. bags .... ton	285.00	–
Calcium chloride, liq., 100 percent basis, t.c., t.l., barge .... ton	99.75	–
45% same basis .... ton	116.00	–
Calcium chloride, USP, gran., 225-lb. dms., t.l., frt. equald. .... lb.	.90	–
Calcium citrate, purif., 200-lb. dms., 10,000 lbs. or more, f.o.b. works .... lb.	3.82	–
Calcium cyanamide, indust., anhyd. dms., works .... ton	400.00	450.00
Calcium gluconate, USP powd. t.l. . lb.	1.90	–
Calcium hydride, lump, dms., 25-1,000-lb. lots. works .... lb.	10.50	13.25
Calcium hypochlorite, 100-lb. dms., truckloads ship't. E. of Rockies .... 100 lbs.	92.40	–
Calcium hypophosphite, dms., bulk, 500 kilos or more .... kilo	13.75	14.50
Calcium iodate, FCC dms., f.o.b. works .... lb.	5.50	–
Calcium iodide, 50-kilo dms., f.o.b. works .... kilo	23.95	25.65
Calcium lactate, NF, powd., pentahydrate, dms., 24,000 lbs. or more, f.o.b. works .... lb.	2.00	–
NF, gran., trihydrate, same basis. lb.	2.10	–
special gran., dried grade, same basis .... lb.	2.60	–
Calcium naphthenate, liq., 4% Ca., c.l., f.o.b. plant, E. of Rockies. . lb.	.95	–
d-Calcium pantothenate, USP, 100-500-kilo lots. .... kilo	11.50	12.50
dl-Calcium pantothenate, feed grade, f.o.b. frt. alld., 250 kilos or more .... kilo	9.00	9.50
dl-Calcium pantothenate, calcium chloride complex, feed grade, 150 grams per lb., f.o.b., frt. alld., 500 lbs or more .... lb.	2.75	–
Calcium phosphate, dibasic, feed grade, 18½% P. bulk, c.l., t.l., f.o.b. works .... ton	228.00	–
Calcium phosphate, dibasic, dihydrate, USP, bgs., c.l., t.l., works, frt. equald. .... 100 lbs.	82.50	–
anhyd., USP, same basis. . 100 lbs.	71.75	–
dentifrice grade, same basis. 60 lbs.	49.90	–
Calcium phosphate, monobasic, monohydrate, food grade, bgs., c.l., t.l., works, frt. equald. .... 100 lbs.	60.50	–
anhyd., food grade, same basis. .... 100 lbs.	54.95	–
tribasic, NF precip., bgs., c.l., frt. equald .... 100 lbs.	92.50	–
Calcium propionate, dms., 2,000 lbs. or more f.o.b. frt. alld .... lb.	.50	.55
Calcium silicate, hydrated, bgs., c.l., works .... lb.	.07	–
Calcium silicate, paint grade (see Wollastonite).		
Calomel, NF, mild powd., 100-lb. dms., f.o.b. works .... lb.	9.50	–
Camphene chlorinated, 67-69% (see Toxaphene).		
Camphor, monobromated, dms., kgs .... lb.	3.63	3.70
Camphor, syn., tech., 165-lb. dms., 5,000 lbs. or more .... lb.	1.80	–
USP, powd., 195-lb. dms., 5,000 lb. lots or more .... lb.	2.36	–
syn., refd., 1-oz. tablets, ctns. 1,000-lb. lots or more .... lb.	3.50	–
Camphor oil, yellow, 25-lb. dms ... lb.	1.65	–
white, dms. .... lb.	2.00	–
spec. grav., 1.070, dms. .... lb.	2.65	2.85
Cananga oil, Indonesian, dms. ... kilo	17.50	–
Candelilla wax, crude, bgs. .... lb.	1.90	–
refd. pure, bgs. .... lb.	2.10	–
Capric acid, coml, pure, dms. .... lb.	.60	.55
tanks .... lb.	.60	.95
Capric aldehyde (aldehyde C-10) dms., cns. .... lb.	3.95	5.35
Caprolactam monomer, flake, bgs., t.l., f.o.b. shipping point ... lb.	.87	–
molten, tanks, same basis. .... lb.	.85	–
Capryl alcohol sec. 92-99% tanks, f.o.b. works .... lb.	.35	–
Caprylic acid, coml. pure tanks .... lb.	.73½	–
Capsicum (see Pepper, red).		
Capsicum oil (see Capsicum oleoresin).		
Capsicum oleoresin, NF, from dom., pepper, dms. .... lb.	11.00	–
NF, from African pepper, dms. 500,000 pungency .... lb.	9.00	–
1,000,000 pungency .... lb.	17.00	19.00
Caraway oil, Poland, dms. .... lb.	22.00	25.00
Caraway seed, Dutch, bgs. .... lb.	.58	.59
Egyptian, bgs. .... lb.	.60	.53
Carbon black, furnace, fast extruding (FEF), bulk, c.l., works .... lb.	.2125	–
bgs., c.l., works .... lb.	.2425	–
general purpose (GPF), bulk, c.l., works .... lb.	.2075	–
bgs., c.l. works .... lb.	.2375	–
high abrasion (HAF), high structure, bulk, c.l. works .... lb.	.2300	–
bgs., c.l. works .... lb.	.2600	–

CHEMICAL PRICES

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Carbon Black, low structure, bulk, c.l. works .... lb.	.240	.260
bags, c.l. works .... lb.	.270	.290
intermediate-super-abrasion (ISAF) .... lb.	.25	–
bgs., c.l. works .... lb.	.28	–
super-abrasion (SAF), bulk, c.l., works .... lb.	.31	–
bgs., c.l., works .... lb.	.4050	–
semi-reinforcing (SRF), bulk, c.l., works .... lb.	.210	–
bgs., c.l., works .... lb.	.240	–
Carbon black, thermal, medium, bgs. c.l., works .... lb.	.30	.30½
bulk, c.l. works .... lb.	.32	.34½
Carbon black oil, barge, f.o.b. Gulf refineries .... bbls.	10.50	12.50
f.o.b. W. coast refineries .... bbls.	10.50	12.50
Carbon disulfide, t.c., f.o.b. works ton	420.00	–
Carbon tetrachloride, CP, consumers, dms., c.l., frt. alld .... lb.	.36	–
tech., dms., c.l., t.l., frt. alld .... lb.	.31	–
tank transport (min. 4,000 gals.) frt. alld .... lb.	.24	–
Carboxymethyl cellulose (see CMC).		
Cardamom oil, NF, bots. .... lb.	60.00	–
Cardamoms, decort, Guatemalan . lb.	3.00	–
green, Guatemalan, bgs. .... lb.	5.25	9.75
Carmine, No. 40, NF, bulk, 100-lb. lots or more, divd .... lb.	135.00	140.00
Carnauba wax, Parnahyba, No. 1, yellow, bgs., ton lots .... lb.	1.95	2.05
Ceara, No. 1, yellow, bgs., ton lots .... lb.	1.75	1.90
North Country, No. 2, refined, bgs., ton lots .... lb.	1.55	1.65
Carnauba wax, North Country No. 3, centrifuged, bgs., ton lots . lb	1.10	–
North Country, No. 3, refined, bgs., ton lots .... lb.	1.30	1.45
Powdered carnauba wax, 20 to 100 mesh, 20c. per lb. higher.		
b-Carotene, in vegetable oil, semi-solid suspension, 400,000 A units per gram., 33 lbs. or more. . lb.	32.75	–
b-Carotene, liq. in vegetable oil, 500,000 A units per gram, 33 lbs or more .... lb.	40.75	–
b-Carotene, dry, beads, 10%, 167,000 A units per gram 50-lb cns lb.	26.95	–
d-Carvone, 25-lb. dms., syn. .... lb.	49.00	–
l-Carvone .... lb.	7.00	7.25
Cascara sagrada bark, bulk .... lb.	1.00	–
Casein, imp., acid-precip., grd., 30-mesh, Australian, edible, same basis, c.i.f. .... lb.	1.45	–
Australian, indust., same basis, c.i.f. .... lb.	1.365	–
Casselle acid, 303 mol. wt., dms., frt. alld., 100% basis .... lb.	3.70	–
Cassia, Korintji "A" bgs. .... lb.	1.05	1.10
"B" bgs. .... lb.	.96	.95
Cassia oil, Chinese, dms .... lb.	18.50	–
Castor oil, raw, No. 1, Braz. tanks. . lb.	.31	.33
USP 5-9 dms. .... lb.	.74	–
refd. deod., 5-9 dms. .... lb.	.78	–
blown, 5-9 dms. .... lb.	.75	–
dehydrated, bodied, tanks .... lb.	.74	–
dehydrated, unbodied, tanks .... lb.	.65	–
Castor oil, acids dehydrated, dms. . lb.	1.10	–
ricinoleic acid. .... lb.	.79½	.83
Castor pomace, bgs., container load, f.o.b., Miami, Fla. .... ton	154.00	–
Castoreum, nat., cns. .... lb.	18.00	35.00
syn., cns. .... lb.	11.00	–
Catechol, CP, 45-kilo dms., 50-239 dms., f.o.b. .... kilo.	7.93	–
tech., bgs., t.l., same basis .... kilo.	3.71	–
Caustic potash (see Potash, caustic).		
Caustic soda (see Soda, caustic).		
Cedarleaf oil, dms. .... lb.	17.50	–
Cedarwood oil, Texas, dms., cns. ... lb.	1.75	2.50
Virginia .... lb.	4.75	–
Cedrol, prime dms. .... lb.	5.25	–
Cedryl acetate, dist., dms. .... lb.	4.25	5.30
Celery seed, Indian, bgs. .... lb.	.48	–
Celery seed oil .... lb.	37.00	–
Cellulose acetate, powd., bgs., t.l., divd E. .... lb.	1.30	–
Cellulose acetate butyrate, powd., 17% butyryl content, bgs., t.l., divd E. .... lb.	1.75	–
38% butyryl content, bgs., divd E. . lb.	1.59	–
50% butyryl content, bgs., divd. E. . lb.	1.81	–
55% butyryl content, bgs., divd. E. . lb.	1.63	–
Cellulose gum, pure, high vis., bgs., 24,000-lb. lots or more works, f.o.b. Hopewell, Va. .... lb.	1.60	1.70
std., low or medium vis., bgs., c.l., t.l., f.o.b. Hopewell, Va. ... lb.	1.60	1.90
Cerium concentrate CeO_2, 50 lbs. . lb.	1.35	–
Cerium hydroxide 80% CeO_2, dms., works .... lb.	5.40	–
77% CeO_2, dms., works .... lb.	4.20	1.60
Cerium oxide, optical grade, bgs., 50-lb. lots or more, divd .... lb.	1.85	1.90
Cetyl alcohol, NF, cns., c.l., t.l., divd. E. lb.	.68½	1.27
Chalk (see Calcium carbonate).		
Chamomile flowers, Hungarian, cs. . lb.	4.25	4.50
Roman, cs. .... lb.	4.94	–
Egyptian, whole .... lb.	2.70	3.00
Chamomile oil, blue, Egyptian .... lb.	545.00	–
blue, Hungarian. .... lb.	370.90	–
Chenopodium oil, NF, cns. .... lb.	15.00	–
Chicago acid, dry, bbls., frt. alld. ... lb.	13.50	–
Chilies (see Pepper, red).		
Chlorendic anhydride, tech., dms., t.l., works .... lb.	1.30	–
Chlorinated paraffin, 40% chlorine, bulk, divd., Zone 1 .... lb.	.45	.49½
50% chlorine, same basis .... lb.	.46	.47½
60% chlorine, same basis .... lb.	.46½	.48½
70% chlorine, resinous, 50-lb, bgs., c.l., divd., Zone 1 .... lb.	.69	–

CHEMICAL PRICES

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Hydrochloric acid, 20° Be. tanks, works, East ... ton	55.00	85.00
Midwest ... ton	60.00	70.00
Gulf Coast ... ton	57.00	-
West Coast ... ton	90.00	105.00
22° acid, same basis, East ... ton	68.00	76.00
Midwest ... ton	66.00	70.00
Gulf Coast ... ton	63.60	-
West Coast ... ton	100.00	115.00
NOTE: Prices vary and are either freight collect freight equalized depending on producer and location.		
Hydrocortisone acetate, micronized, dms., 25 kilos or more . gram.	.70	-
Hydrocortisone, alcohol, micronized, dms., 25 kilos or more . gram.	.70	-
Hydrofluoric acid, anhyd (see Hydrogen fluoride)		
Hydrofluoric acid, aqueous. 70% tanks., f.o.b. frt. equald ... 100lbs.	43.00	-
Hydrofluosilicic acid, 15-gal. dms, t.l., works, 30% basis ... ton	-	-
tanks, 100% basis, works ... ton	190.00	210.00
Hydrogen bromide, anhyd. cyls, extra. 30,000-lbs., f.o.b. works. lb.	7.00	-
Hydrogen chloride, anhyd., 50-lb. cyls., c.l., works ... lb.	.66	-
600-lb cyls., c.l., same basis ... lb	.62	-
Hydrogen chloride, anhyd, tube trailers, seller's trailer, min. 100,000 lbs. a year ... lb.	.37	-
tube trailers, buyer's trailer ... lb	.27	-
Hydrogen chloride anhyd., tanks, works ... ton	270.00	-
Hydrogen cyanide, liq., 99.5% tanks, works ... lb.	.60	-
Hydrogen fluoride, anhyd., tank cars c.l., f.o.b., frt. equald ... lb.	.8875	-
Hydrogen peroxide, 35% tech., tanks, works, ft. equald ... lb.	.2325	-
50% tankcars, frt. equald ... lb.	.3225	-
70%, tankcars frt. equald ... lb.	.45	-
Hydrogen sulfide, liq., 99.25% min. seller's tanks, works ... lb.	.12	.13
170 lb. cylinders ... lb.	2.27	-
Hydroquinone, photo grade, consumers c.l., t.l., divd ... lb.	2.54	-
tech., dms. c.l., divd ... lb.	1.95	-
Hydroxyacetic acid, tech., 70%, tanks, Belle, W. Va. ... lb.	.46½	-
Hydroxylammonium sulfate, dms, t.l., f.o.b. ... lb.	.83	-
p-Hydroxybenzene sulfonic acid (see p-Phenolsulfonic acid).		
Hydroxybutyl methylcellulose (visc. 12,000 cps.) 50 lb bags, tl., cl. 30,000 lb. min., divd., zone 1 ... lb.	2.10	-
Hydroxycitronellal dimethyl acetal, dms ... lb.	16.55	-
p-Hydroxydiphenylamine, dms., t.l., f.o.b. works ... lb.	4.10	-
Hydroxycitronellal, natural, dms ... lb.	9.40	-
pure, dms ... lb.	13.60	-
extra grade, dms ... lb.	14.60	-
syn., dms ... lb.	9.60	-
Hydroxyethylcellulose, t.l., divd ... lb.	2.07	2.12
Hydroxyethyl methylcellulose (visc. 5,000 through 45,000 cps.) 50 lb. bags, t.l., c.l., 30,000 lb. min., divd., zone 1 ... lb.	2.73	-
Hydroxypropyl methylcellulose, premium, U.S.P. (visc. 4,000 through 15,000) 50 lb. bags, t.f., c.l., 30,000 lb. min, divd., zone 1 ... lb.	2.87	-
Hydroxypropyl methylcellulose, U.S.P. (visc. 50 through 100 cps) 50 lb. bags, t.f., c.f., 30,000 lb. min., divd., zone 1 ... lb.	2.99	-
Hydroxypropyl methylcellulose (visc. 4,000 through 15,000 cps) 50 lb. bags, t.l., c.l., 30,000 lb. min., divd., zone 1 ... lb.	2.17	-
Hydroxypropyl methylcellulose (visc. 50 through 100 cps) 50 lb. bags, t.l., c.l., 30,000 lb. min., divd., zone 1 ... lb.	2.64	-
8-Hydroxyquinoline (see Oxyquinoline)		
Hypophosphorous acid, purif., 50% dms, c.l., works ... lb.	3.15	-

I

Ichthammol NF 200-kilo dms ... lb.	4.25	4.50
Iminodiacetic acid, 96% min., dms., c.l., t.l., works ... lb.	3.00	-
Indole, dms ... lb.	25.50	-
Inositol, 50-kilo dms., 1000 kilos or more, f.o.b. works ... kilo	17.50	22.00
Iodine, crude, dms ... kilo	13.50	16.00
Iodine USP ... lb.	14.21	14.59
Iodochlorhydroxyquin, USP, XVI 50-kilo dms., 100-499 kilos, frt. alld ... kilo	35.00	45.00
Iodoform, NF, dms., 300-lbs., f.o.b. works ... lb.	24.00	-
a-Ionone, dms ... lb.	18.20	-
b-Ionone, dms ... lb.	13.10	-
Ipecac root, whole, bgs ... lb.	25.00	-
Irish moss, bleached, prime, whole ... lbs.	.55	.60
Iron blue, alkali-resistant, bgs., l.c.l., ton lots, div. E. ... lb.	2.70	-
Iron blue, reg., bgs., l.c.l., ton lots, same basis ... lb.	2.00	2.15
Iron, purif., powd., pails, 10-100-lb. lots ... lb.	1.00	-
Iron oxide, black, syn., bgs., c.l., frt. equald ... lb.	.69½	.75½
Iron oxide, brown, syn., bgs., c.l., frt. equald ... lb.	.68	.78½
Iron oxide, metallic brown, l.c.l., bgs., frt. equald ... lb.	.13	.15
Iron oxide, nat., red., dom., pure, bgs., c.l., works ... lb.	.275	.40
Iron oxide, yellow ... lb.	.16	-
syn., bgs., c.l., frt. equald ... lb.	.63	.71
Iron oxide, buff, nat., dom, bgs., c.l., t.l., works, light ... lb.	.75	.80
dark ... lb.	.00	-
other shades, bgs., c.l., frt. equald ... lb.	.50	.55
Isatoic anhydride, bgs., f.o.b. works ... lb.	1.40	-
Isoamyl alcohol, 95% tanks, frt. alld ... lb.	1.44	1.48
Isoborneol, 100 lb. dms ... lb.	7.25	-
Isobornyl acetate, dms ... lb.	.60	1.15
Isobutyl acetate, solvent grade, tanks, frt. alld ... lb.	.45	.48
Isobutyl acrylate, tanks, frt. alld E. ... lb.	.71	-
Isobutyl alcohol, tanks, divd ... lb.	.29	-
Isobutylene, 99%, tanks, f.o.b. works ... lb.	.32	-
Isobutyl isobutyrate, tanks, f.o.b. works ... lb.	.42½	-
Isobutyl methacrylate, tanks, divd ... lb.	.87	-
Isobutyl phenylacetate, dms ... lb.	3.10	3.60
Isobutyl salicylate, dms ... lb.	3.45	-
Isobutyraldehyde, tech., dms., c.l., divd ... lb.	.43	-
tanks, divd ... lb.	.35	-
Isobutyric acid, dms., c.l., t.l., divd ... lb.	No Prices	
tanks, same basis ... lb.	.76	
Isobutyronitrile, dms., c.l., f.o.b. works frt. collect ... lb.	.84	-
tanks, same basis ... lb.	.75	-
Isoeugenol, dms ... lb.	5.20	5.60
Isoniazid, powd. ... kilo	12.00	-
Isonicotinic acid, hydrazine (see Isoniazid).		
Isononyl alcohol, dms., t.l. ... lb.	.48	-
Iso-octyl alcohol, tanks, divd ... lb.	.44	-
Isophorone, tanks divd ... lb.	.81	-
Isophthalic acid, 99%, bulk, f.o.b., Joliet, Ill., min. frt. alld ... lb.	.46	-
Isophthalonitrile, bgs., t.l., works ... lb.	2.65	-
Isopropyl acetate, tanks, divd ... lb.	.47	-
Isopropyl alcohol, anhyd., 99%, tanks, divd ... gal.	1.38	-
refd., 95%, tanks, divd ... gal.	1.31	-
refd., 91%, tanks, divd ... gal.	1.25	-
Isopropyl ether, tanks, divd ... lb.	.44	-
crude, tanks, divd ... lb.	.37	-
Isopropylamine. (see Mono-, Di- or Tri-).		
Isopropyl myristate, dms., t.l., E. ... lb.	1.19	1.60
Itaconic acid, refd. bgs t.l. ... lb.	1.45	1.48

J

J acid, paste, dms., works, 100% basis ... kilo	4.75	-
Japan wax, cs. ... lb.	5.50	5.60
Jojoba oil, 55-gal. dms., f.o.b. Arizona producing point ... gal.	30.00	40.00
Juniperberry oil, Italian ... kilo	120.00	-

K

Kaolin, water washed, fully calcined, bags c.l., f.o.b. Georgia ... ton	255.00	-
NF pwd., colloidal, bacteria controlled, 50 lb. bags, 5,000 lb. lots ... lb.	.24	-
Kaolin, uncalcined. No. 1 coating, bulk, c.l., f.o.b., Georgia ... ton	94.00	-
No. 2 coating ... ton	75.00	-
No. 3 coating ... ton	73.00	-
No. 4 coating ... ton	70.00	-
filler, gen'l purpose, same basis ... ton	58.00	-
delaminated water washed, uncalcined paint grade 1 micron avg., same basis ... ton	182.00	-
dry-grd. airfloated soft, same basis ... ton	60.00	-
Karaya gum, No. 1, powd., bbls. ... lb.	2.25	-
No. 2, powd., bbls ... lb.	1.95	-
Kola nuts, bgs. ... lb.	.50	.53

L

Lacquer diluent petroleum, 140F.-200F. b.r., f.c., New Jersey and New York ... gal.	1.25	-
Houston, Texas ... gal.	1.29	-
Lacquer diluent, petroleum 200F.-240F. b.r., tankcars, New York and New Jersey ... gal.	1.20	1.25
Houston, Tex. ... gal.	1.12	-
Lactic acid, food grade 88%, f.c., f.o.b. works ... lb.	1.06	-
50%, t.c., frt. equald ... lb.	.62	-
tech., 88%, t.c., frt. equald ... lb.	1.03	-
Lactose, edible, reg. bgs., c.l., works ... lb.	.22	.28
Lactose, USP, reg. dms., c.l., t.l., frt. equald ... lb.	.55	.69
Lactose, USP, spray dried, bgs., t.l., frt. equald ... lb.	.60	
Lake C, red toner. (red 53) bbls., frt. alld ... lb.	5.70	-
Lanolin, anhyd., cosmetic. 400-lb. dms., works ... lb.	1.18	1.25
pharmaceutical, 400-lb. dms. works ... lb.	1.16	-
tech., (under 2% f.f.a.), 400-lb. dms., works ... lb.	1.08	1.13
Lard (See Oils, Fats & Waxes market report.)		
Lard oil, No. 1, dms., c.l., f.o.b ... lb.	.34	
tanks, same basis ... lb.	.28	
Lard oil, extra, winter-strained, dms., c.l. ... lb.	.41	-
tanks, same basis ... lb.	.33	-
prime, burning, dms., c.l., same basis, Chicago ... lb.	.43	-
prime, burning, tanks, same basis ... lb.	.35	-
NOTE: 300 Mi. rad. 1¼c. higher, except Texas, 2c., and West Coast, 3c. higher.		
Laurel leaves, Turkish ... lb.	3.00	3.10
Laurent's acid, drums, f.o.b. ... lb.	3.85	-
Lauric acid, coml., pure bgs., c.l. ... lb.	.65	.71
Lauric aldehyde (aldehyde C-12). dms ... lb.	7.75	-
n-Lauryl methacrylate, dms., c.t., t.l., works ... lb.	1.72	-
Lavandin oil, Abrialis, 30-32%, dms. lb.	6.50	-
Lavender flowers, ord. ... lb.	.65	.75
medium, bls. ... lb.	.60	.90
select. bls. ... lb.	1.10	1.19
Lavender flower oil, NF, French, 40-42%, ester, cns. ... lb.	8.00	13.00
spike, Spanish, dms ... kilo	13.00	14.00
Lead acetate, purif., flake. 400-lb. dms., works ... lb.	.46	-
tech., flake, t.l., 400lb. dms., works ... lb.	.37	-
Lead blue, basic, sulfate, bbls., c.l., ship.t. pt., f.o.b. ... lb.	.87	-
Lead carbonate. (see Lead white basic carbonate).		
Lead chloride, 400-lb. dms., works. lb.	3.26	-
Lead dioxide, tech., powd., 200-lb. dms., t.l., works ... lb.	.86	.70
Lead fluoborate, liq. conc., dms., t.l., works, frt. equald ... lb.	.65	-
Lead metal, divd. ... lb.	.24	-
Lead monosilicate, milled, bgs., c.l., f.o.b. works ... lb.	.58½	-
coarse, bgs., c.l., same basis ... lb.	.57½	-
Lead naphthenate liq., 24% Pb. dms., frt. alld ... lb.	.63	-
Lead nitrate tech., cryst., 400-lb. dms., t.l., works ... lb.	.32½	-
Lead peroxide (see Lead dioxide).		
Lead red, 95% Pb_3O_4, or less. bgs. c.l., works ... lb.	.37	-
Lead red, 87% Pb_3O_4, bgs. c.t., works ... lb.	.37½	-
Lead, red, 98% Pb_3O_4, bgs., c.l., same basis ... lb.	.37½	.40½
Lead silicate (see Lead, white, basic silicate).		
Lead silicochromate, bgs., c.l., works ... lb.	.35	-
Lead sulfate (see Lead, blue, basic sulfate and Lead, white, basic sulfate)		
Lead, white, basic carbonate, bgs., c.l., frt. alld ... lb.	.62	-
Lead, white, basic, silicate, bgs., c.l., same basis ... lb.	.87	-
Lead, white, basic sulfate, bgs., c.l., same basis ... lb.	.85	-
Lecithin, edible, tech., bleached, non-ret. dms., l.c.l., works ... lb.	.38	-
unbleached non-ret. dms., l.c.l., same basis ... lb.	.34	-
edible, tech. bleached, non-ret., dms., t.l., works ... lb.	.28	-
unbleached, non-ret., dms., t.l., same basis ... lb.	.28	-
Lemon oil, Argentina ... kilo	15.00	-
Brazil ... lb.	9.00	-
Calif., USP, dms. ... lb.	8.60	9.50
Italian ... lb.	12.50	-
Lemongrass oil, Indian, dms ... kilo	11.25	-
Guatemalan, dms ... lb.	2.25	-
dl-Leucine, dms., 1 kilo works ... kilo	60.00	90.00
Licorice root, whole, bls. ... lb.	.40	.50
gran., bls. ... lb.	.70	.90
powd., bls. ... lb.	.95	-
Lignosulfonate (see under Ammonium or Sodium lignin sulfonate).		
Lime, chemical, pebble (quicklime), bulk, 60,000 lbs., works, f.o.b. plants ... ton	39.00	45.00
Lime, chemical, hydrated, bulk, same basis ... ton	48.00	60.00
bgs., same basis ... ton	54.00	57.00
Lime, NF, purif., 100-lb. dms ... lb.	.69	-
Lime oil, dist., Mexican, dms ... lb.	5.60	-
Haitian, dist., dms ... lb.	8.60	-
expressed, dms ... lb.	17.50	-
Lime salts (see Calcium).		
d-Limonene, dms ... kilo	.70	.85
Linalool ex bois de rose oil, dms ... lb.	6.35	-
syn., 98-100% dms., f.o.b. works ... lb.	2.83	-
Linalool oxide, syn., 55-gal. dm. ... lb.	7.75	-
Linalyl acetate ex bois de rose oil, 90-92%, dms ... lb.	18.00	21.00
syn. 98-100%, dms., f.o.b. works. lb.	3.10	-
Linalyl benzoate, syn., 55-gal. dms. lb.	8.00	-
Linalyl cinnamate, syn., 55-gal. dms ... lb.	69.65	-
Linalyl formate, syn., 55-gal. dms ... lb.	7.75	8.50
Linalyl isobutyrate, syn., 55-gal. dms ... lb.	6.50	6.55
Lindane, 20% formulation, dms., divd ... gal	13.10	-
99.6% tech., dms., f.l., divd ... lb.	6.60	-
Linalyl propionate, syn., 55-gal. dms ... lb.	7.60	-
Linden flowers, with leaves, bls. ... lb.	.76	.85
without leaves, bls. ... lb.	.90	1.15
Linseed meal (see Oils, Fats & Waxes market report).		
Linseed oil, (see Oils, Fats & Waxes market report)		
Linseed oil fatty acid, dist., dms ... lb.	.60	.87
tanks ... lb.	.53	.62
Litharge, coml., powd., bgs., c.l., works ... lb.	.36½	.60
Lithium bromide, anhyd., dms., ton lots, divd ... lb.	6.27	-
soln., same basis ... lb.	4.00	-
Lithium carbonate, powd., bgs., c.l., t.l., divd ... lb.	1.50	-
Lithium chloride, anhyd., c.l., t.l., divd ... lb.	3.32	-
soln., dms., c.l., t.l., divd ... lb.	2.94	-
Lithium fluoride, dms., c.l., t.l., divd. lb.	4.90	-
Lithium hydride, c.l., t.t., divd. 10,000 or more ... lb.	23.50	-
Lithium hydroxide, monohydrate, dms., c.l., t.l., divd ... lb.	1.93	-
Lithium hypochlorite, c.l., t.l., works ... lb.	1.07	-
Lithium metal, 1,000-lb. lots or more, divd ... lb.	22.70	-
Lithium nitrate, tech., dms., 100-lb. lots ... lb.	3.25	-
Lithium stearate, bgs., c.l., frt. alld. lb.	1.01	-
Lithium sulfate, anhydrous, t.l. divd. lb.	3.09	-
Lithol red toner, barium, dms., frt. alld ... lb.	3.27	-
calcium, dms., same basis ... lb.	3.50	-
Lithol rubine toner (red 57), resinated, dms., frt. alld ... lb.	5.60	-
Litsea cubaba oil, dms ... lb.	2.50	-
Locust bean gum, powd., bgs ... lb.	6.00	[illegible]
2,4-Lutidine, dms., t.l., frt. equald. kilo	5.75	-
Lycopodium, 50-lb. dms ... lb.	8.00	[illegible]
1-Lysine monohydrochloride, feed grade, 10,000 lbs. divd ... lb.	1.35	[illegible]

M

Mace, East Indian, siftings ... lb.	4.95	[illegible]
Siauw #2 ... lb.	5.80	[illegible]
Magnesia, tech., light, neoprene-grade, bgs., c.l., t.l., works lb.	.75	[illegible]
Magnesia, syn., tech., chemical-grade, bulk, c.l., t.l. works ... ton	330.00	-
bags, c.l., t.l., same basis ... ton	365.00	-
deadburned, bulk, same basis ... ton	392.00	-
bgs., same basis ... ton	409.00	-
Magnesia, nat., tech., heavy, 85%, 150 mesh, bulk, c.l., t.l., f.o.b. Nev. ... ton	232.00	-
80%, 325 mesh, same basis ... ton	265.00	-
Magnesium bromide, 80-lb. dms., hexahydrate ... lb.	2.60	-
Magnesium carbonate, light, tech., bgs., c.l., t.l., works, frt. equald ... lb.	.73	[illegible]
USP, lite bgs., c.l., same basis ... lb.	.74	[illegible]
USP, heavy, bgs., c.l., same basis ... lb.	.83	-
Magnesium chloride, anhyd., 92%, flake or pebble dms., c.l., works ... lb.	.12¾	[illegible]
Magnesium chloride, hydrous, 99%, flake, bgs., c.l., works ... lb.	.14½	-
Magnesium gluconate, 100-lb. dms f.o.b. works, E. ... lb.	4.25	-
Magnesium hydroxide, NF, powd., dms., c.l., t.l., works frt. equald ... lb.	.78	-
Magnesium lauryl sulfate, tanks, f.o.b. works ... lb.	.22	[illegible]
Magnesium metal, 99.8%, ingots, 10,000-lb. lots or more. f.o.b. Freeport, Tex. ... lb.	1.53	-
die casting alloys ... lb.	1.29	[illegible]
Magnesium nitrate, tech., flake. 250-lb. dms., t.l., works ... lb.	.32	-
Magnesium oxide, USP, light, bgs., c.l., works, frt. equald ... lb.	1.65	-
heavy, dms., c.l., same basis ... lb.	1.54	-
Magnesium oxide, tech. (see Magnesia).		
Magnesium phosphate, tribasic, tech. 60-lb. bgs., f.o.b. ... lb.	1.00	-
Magnesium silicate (see Talc).		
Magnesium silicofluoride, bgs., c.l., t.l. works ... lb.	.1645	[illegible]
Magnesium stearate, bulk, t.l. ... lb.	.95	[illegible]
Magnesium sulfate 10% Mg. (epsom salts), tech. bgs., t.l., works ... lb.	.14	-
bulk, same basis ... lb.	.13	-
USP, cryst., bgs., same basis ... lb.	.13½	-
USP, cryst., bulk, same basis ... lb.	.14½	-
Magnesium sulfate, 17% Mg. (synthetic monohydrate). tech. bgs. t.l., works ... lbs.	.80	-
CP, same basis ... lbs.	1.25	-
Magnesium sulfate, anhydrous, CP bgs., t.l., works ... lbs.	1.75	-
Magnesium sulfate trihydrate, tech., bgs., t.l., works ... lb.	.45	-
Magnesium trisilicate, USP, powd., dms. 5,000-lb. lots ... lb.	.38	-
USP, micronized powd., dms., 375-lb. lots ... lb.	.83	-
Malathion, tech., dms., t.l., works. lb.	1.82	-
Maleic acid, cryst., powd., drums, 100 kilos, f.o.b. ... kilos	3.20	-
drums, tons, f.o.b. ... kilos	2.80	-
Maleic anhydride, bgs., t.l., works, frt. equald ... lb.	.55	[illegible]
tanks, works, frt. equald ... lb.	.53	-
Malic acid, purif. and food grades. 60-lb. bgs., t.l., c.l., divd ... lb.	.81	[illegible]
Mandarin oil, Brazilian, dms ... lb.	17.75	-
Mandelic acid, dms., 1,000 kilo lots ... kilo	8.00	[illegible]
Manganese acetate, dihydrate, dms., divd ... lb.	.43½	[illegible]
tetrahydrate, dms., t.l., divd ... lb.	.48	-
Manganese borate printing ink drier. lb.	1.88	[illegible]
Manganese borate, tech., dms ... lb.	.80	[illegible]
Manganese carbonate, chemical grade, 46% Mn. bgs., 20,000-lb. lots or more, works ... lb.	1.05	-
Manganese chloride, anhyd., dms., 20,000-lb. lots or more ... lb.	.61	-
Manganese dioxide, nat., African, grd., 74%-76% MnO_2, 100-lb. bgs., t.l., works ... ton	200.00	[illegible]
84% MnO_2, same basis ... ton	250.00	
Manganese dioxide, syn., cryst., battery grade, 80%-92% MnO_2, 100-lb. bgs., c.l., works ... lb.	.70	[illegible]
chemical; ferrite grade, same basis ... lb.	.48	[illegible]
Manganese gluconate, FCC grade, 100-lb dms., f.o.b. works ... lb.	3.60	[illegible]
Manganese hydrate dms., divd ... lb.	.36	[illegible]
Manganese hypophosphite, NF, dms ... lb.	8.75	[illegible]
Manganese metal, electrolytic, No. 1 chip, bulk, c.l., works ... lb.	[illegible]	[illegible]
dms., c.l., works ... lb.	[illegible]	[illegible]
Manganese naphthenate, liq. dms., divd ... lb.	[illegible]	[illegible]

Manganese resinate, fused, 3½% Mn. dms., frt. alld ... lb.	.34¼	-
precip. 6½-7% Mn. dms ... lb.	.42	-
Manganese sulfate, fertilizer grade, run-of-pile, 75%-78% $MnSO_4$, 25 kilo bgs., 50-ton cars, divd. E. of Miss. ... ton	280.00	-
bulk, hopper cars, same basis ... ton	245.00	-
Manganese sulfate, 28% Mn, gran., bgs., c.l., t.l., works ... ton	330.00	-
Manganese tallate, liq., 6% Mn, dms., frt. alld ... lb.	.60	-
Mannitol, coml., powd., dms., t.t., works ... lb.	3.02	-
Marjoram, French ... lb.	.68	.88
Egyptian ... lb.	.61	.82
MBT (see 2-Mercaptobenzothiazole).		
MBTS (see Mercaptobenzothiazyl disulfide).		
MDI (see Diphenylmethane 4,4,-di-isocyanate)		
Melamine, bgs., c.l., t.l., 40,000-lb. min., f.o.b. works ... lb.	.51½	.58½
bulk, c.l., t.l., same basis ... lb.	.50	.56
Melamine-formaldehyde resin, g.p., t.l. frt. alld ... lb.	.55	.60
molding compounds, same basis ... lb.	.48½	-
Menhaden oil, crude, tanks, works Atlantic Coast ... lb.	.12	-
Gulf ports, same basis ... lb.	.13	-
Menthol, nat., USP, Brazilian large and regular crystals, spot, cs., bulk ... lb.	8.50	6.75
syn. USP, racemic, 100-450 lbs. lb.	9.00	-
2-Mercaptobenzothiazole, bgs., t.l., works, frt. alld ... lb.	1.25	1.55
Mercaptobenzothiazyl disulfide t.l., dms., works, frt. alld ... lb.	1.33	1.86
Mercuric chloride NF, gran., powd., 100-lb. dms., f.o.b. works ... lb.	8.60	-
Mercuric oxide, red, purif., 100-lb. dms, f.o.b. works ... lb.	7.00	7.25
tech., 100-lb. dms., same basis ... lb.	6.50	7.00
yellow, NF, 100-lb. dms., same basis ... lb.	7.00	7.25
tech., 100-lb. dms., same basis ... lb.	6.50	7.50
Mercurous chloride (see Calomel).		
Mercury, ammoniated (see White precipitate USP XV).		
Mesityl oxide, tanks, divd ... lb.	.48	-
Methacrylic acid, glacial, 99%, dms., t.l., frt. equald ... lb.	.87	-
tanks, works, frt. equald ... lb.	.78	-
d-Methamphetamine hydrochloride, dms ... lb.	12.00	18.00
d-Methamphetamine hydrochloride, dms ... lb.	4.50	7.00
Methanol, syn., barges, f.o.b. producing point, Gulf Coast ... gal.	.28	-
Methenamine (see Hexamethylenetetramine).		
Methionine hydroxyanalogue, dry, 86% activity t.l., frt. alld ... lb.	.86	-
liquid, 88% activity, t.l. frt. alld ... lb.	.66	-
dl-Methionine (see Racemethionine)		
Methoxychlor, 50% wettable powder, dealers, dms ... lb.	2.05	-
Methyl abietate, non-ret. dms., c.l., divd. E. ... lb.	9.40	-
Methyl abietate, hydrogenated, non-ret. dms., l.c.l., same basis ... lb.	10.00	-
Methyl acetoacetate, East, divd. bulk ... lb.	.65	-
Methyl acrylate, tanks, divd ... lb.	66.00	-
Methyl alcohol (see Methanol)		
Methyl amyl alcohol, tanks, divd ... lb.	.55	-
Methyl n-amyl ketone, tks., divd ... lb.	.54½	-
Methyl anthranilate, tech., dms., f.o.b. ... lb.	1.41	2.85
Methyl benzoate, dms., t.l. ... lb.	.25	-
99.5%, perf. grade, dms., t.l. ... lb.	1.65	-
Methyl bromide, dist., tanks, 140,000 lbs. min., frt. alld ... lb.	.56¾	-
Methylcellulose, premium, USP (visc. 400 through 4,000 cps) 50 lb. bags, tl., cl., 30,000 lb., min., divd., zone 1 ... lb.	2.73	-
Methylcellulose, premium USP (visc. 15 cps) 50 lb. bags, tl., cl., 30,000 lbs., divd., zone 1 ... lb.	2.85	-
Methylcellulose, (visc. 400 through 4,000 cps) 50 lb. bgs., tl., cl., 30,000 lbs., divd., zone 1 ... lb.	2.24	-
Methylcellulose (visc. 15 to 26 cps) 60 lb. bags, tl., cl., 30,000 lb. min., divd., zone 1 ... lb.	2.62	-
Methyl chloride, indust. bulk, tanks, f.o.b. works ... lb.	.26	-
Methyl chloroform (see 1,1,1-Trichloroethane).		
Methyl cinnamate, dms ... lb.	4.85	-
Methyl p-cresol, dms ... lb.	6.00	-
Methyl ethyl ketone, tanks, divd, E. ... lb.	.235	-
Methyl eugenol, 25-lb. cns ... lb.	3.65	3.80
Methyl formate, pure, non-ret. dms., works ... lb.	.41	-
tanks, same basis ... lb.	.29	-
tech., tanks, works ... lb.	.31	-
Methyl heptenol, syn., 55-gal dms. lb.	14.50	-
Methyl heptenone, pure, dms ... lb.	7.30	-
Methyl heptin carbonate, dms ... lb.	45.00	-
Methyl p-hydroxybenzoate (see Methylparaben)		
Methyl ionone, std., dms. ... lb.	7.30	9.40
Methyl isoamyl ketone, tanks, divd. E. ... lb.	.61	-
Methyl isobutyl carbinol (see Methyl amyl alcohol).		
Methyl isobutyl ketone, tanks, divd. lb.	.35	-
divd. zone 2 (Calif.) ... lb.	.38	-
divd. zone 3 (W. of Rockies, excluding Calif.) ... lb.	.41	-
Methyl isoeugenol, 25-lb. cns ... lb.	6.60	10.40
Methyl methacrylate, tanks, divd. ... lb.	.62	-
Methyl naphthyl ketone, cryst., dms ... lb.	14.00	-
Methylparaben, USP, 500 kilograms, f.o.b. ... kilo	10.14	-
tech., 500 kilograms, f.o.b. ... kilo	6.70	-
Methyl parathion, tech., 80%, dms., frt. alld. E. ... lb.	1.65	-
Methyl phenylacetate, dms ... lb.	3.60	5.40
N-Methyl-2-pyrrolidone, tanks, f.o.b. plant ... lb.	1.32	-
dms., c.l., t.l., same basis ... lb.	1.40	-
Methyl rosaniline chloride, USP, 1-lb. cans ... lb.	5.60	-
Methyl salicylate, NF, 1000-lb. dms., t.l., frt. alld ... lb.	1.79	1.84
Methyl violet (see Methyl rosaniline chloride).		
Methyl violet toner, molybdated, PMA, bbls., divd. E. of Rockies ... lb.	3.25	-
Methyl violet toner, tungstated, PTA, bbls., same basis ... lb.	4.70	5.20
4,4,-Methylene dianiline (p,p-diaminodiphenyl methane) crude, dms., t.l., f.o.b. ... lb.	1.75	-
purif., flake, same basis ... lb.	2.25	-
Methylene di-p-phenylene di-isocyanate (see diphenylmethane 4,4,-di-isocyanate).		
Methylene chloride, tanks, 4,000 gal.-min., consumers, divd ... lb.	.35	-
Methylpentanediol (see Hexylene glycol).		
Methylphenylpyrazolone (see 1-Phenyl-3-methyl-pyrazolone-5).		
a-Methylstyrene, f.o.b. shipping pt. lb.	.44	-
p-Methylnaphthalene, bulk, works gal.	1.38	-
Methylthionine chloride (see Methylene blue).		
Mica, dry-grd., joint cement, plastic, 50 lb., bgs., c.l., works ... lb.	.07½	-
dry-grd., roofing, 20 to 80 mesh. works ... lb.	.07	-
paint or lacq., wet-grd., 325-mesh, bgs., c.l., f.o.b. works ... lb.	.18¾	-
rubber, bgs., c.l., f.o.b. works ... lb.	.18¾	-
wallpaper, bgs., c.l., f.o.b. works. lb.	.22	-
Microcrystalline wax, petroleum, coating grades, FDA, tanks, works ... lb.	.36½	.46½
laminating grades, FDA, tanks, works ... lb.	.38½	.48
Mineral oil, white, 50-65 vis., USP light tanks, refy ... gal.	2.38	-
85-75 vis., tanks, refy ... gal.	2.42	-
80-90 vis., tanks, refy ... gal.	2.45	-
145-155 vis., tanks, refy ... gal.	2.53	-
USP 180-190 vis., tanks, refy ... gal.	2.54	-
200-210 vis., tanks, refy ... gal.	2.58	-
340-350 vis., tanks, refy ... gal.	2.85	-
Mineral spirits, petroleum, odorless, tanks, New Jersey ... gal.	1.83	1.88
Houston, Tex. ... gal.	1.78	1.79
Mineral spirits, petroleum, regular, tanks, New Jersey ... gal.	1.41	1.49
Houston, Tex. ... gal.	1.41	1.43
Molybdate orange, bbls ... lb.	1.52	1.85
Molybdenum metal, coml., powd., 99.8%, dms., works ... lb.	13.60	-
Molybdenum trioxide, CP, dms., works, 24,000 lbs. or more lb.	5.25	-
tech., chemical, dms., 24,000 lbs. or more, basis ... lb.	2.66	2.85
tech. metallurgical, dms. same basis lb.	2.65	2.86
Molybdic acid (See Ammonium Dimolybdate)		
Monoammonium phosphate, fert. grade, min. 13% N. 52% P. bulk, c.l., f.o.b. Fla. works ... ton	155.00	-
Monoammonium phosphate, tech., bgs., c.l., t.l., works, frt. equald ... 100 lbs.	54.00	-
food grade, bgs., c.l., t.l., same basis ... 100 lbs.	59.25	-
Mono-tert-butyl-m-cresol, bulk, t.l. . lb.	1.89	-
Monobutylamine, bulk, divd ... lb.	.98	1.00
Monochloroacetic acid, purif. (see Chloroacetic acid, mono).		
Monochlorobenzene, tanks, f.o.b. . lb.	.42½	-
Monoethanolamine, tanks, frt. alld E. ... lb.	.43	.46
Monoethylamine, 70% aqueous tanks, frt. prepaid, 100% basis ... lb.	.94	-
anhyd., tanks, same basis ... lb.	.92	-
Monoisopropanolamine, dms., c.l., frt. alld. E. ... lb.	.78	-
tanks, same basis ... lb.	.68	-
Monoisopropylamine, anhyd., dms., c.l., frt. prepaid ... lb.	.79	-
tanks, same basis ... lb.	.78	-
Monomethylamine, anhyd., tanks, contained basis frt. equald ... lb.	.54½	-
25% soln., tanks, frt. alld. 100% basis ... lb.	.57	-
40-60% soln., tanks, frt. equald. 100% basis ... lb.	.63½	-
Monopotassium glutamate, dms., 980 lb. or more, frt. alld ... lb.	2.60	-
Monosodium glutamate, 50-lb. bgs. c.l., t.l., divd ... lb.	.78	.80
100-lb. drums, c.l., t.l., divd ... lb.	.65	-
Monosodium phosphate (see Sodium phosphate, monobasic).		
Montan wax, crude, imp., German . lb.	.55	.57
dom., Calif., bgs., c.l., t.l., f.o.b. shipt. pt. ... lb.	.81	-
refd., dom. Calif., same basis ... lb.		
Morphine alkaloid, NF, 25 k lots .. kilo	1018.00	-
Morphine sulfate, USP, 25 k lots .. kilo	850.00	-
Morpholine, dms., c.l., frt. alld. E. ... lb.	1.02	-
tanks, frt. alld., E. ... lb.	.94	-
Muriatic acid (see Hydrochloric acid).		
Musk, syn., ambrette, 25-lb. cns ... lb.	6.00	7.00
Musk, syn., ketone, dms ... lb.	10.75	-
Musk, syn., xylol, dms ... lb.	3.60	-
Mustard oil, syn. (see Allyl isothiocyanate).		
Mustard seed, Brown No. 1 ... lb.	.22	-
Canadian No. 1 Yellow ... lb.	.23	-
Oriental No. 1 bgs ... lb.	.22	-
Myrcia oil (see Bay oil).		
Myristic acid, coml., pure, t.l., bgs. . lb.	1.30	-
tanks ... lb.	1.12	-
Myristica oil (see Nutmeg oil).		
Myrrh gum, bgs. ... lb.	2.25	-

N

Naphtha, high solvency (see Solvent naphtha, petroleum).		
Naphtha, petroleum, cleaners (see Cleaner's naphtha).		
Naphtha, VM&P, petroleum, tanks, New Jersey and New York ... gal.	1.29	1.34
Houston, Tex. ... gal.	1.20	-
Naphthalene, crude, dom., 78°, tanks, works ... lb.	.22	-
Naphthalene, phthalic anhydride grade, tanks, works ... lb.	.23½	-
Naphthalene, petroleum, 80°C., f.o.b. ... lb.	.30	.32½
Naphthalene, refd., balls, flakes, whole salers, jobbers, dms., works ... lb.	.65	.77
Naphthenic acid, crude, bulk, works lb.	.30	.43
refined, 220 acid, same basis ... lb.	.60	.90
a-Naphthol, ground, dms., t.l. divd. lb.	1.51	-
b-Naphthol, tech. flake, 80-lb. bgs., c.l., works ... lb.	1.10	
Naphthol arylide red toner deep shades, bbls ... lb.	8.50	-
light shades, bbls ... lb.	7.75	-
2-Naphthol-3,6-disulfonic acid, disodium salt (see R salt).		
1-Naphthol-5-sulfonic acid (see L- acid).		
1-Naphthol-5-sulfonic 8-amino acid (see S acid).		
Naphthylamine sulfonic mixed acid (see Cleve's acid).		
a-Naphthylamine, tanks, f.o.b. works ... lb.	2.10	-
1-Naphthylamine-5-sulfonic acid (see Laurent's acid).		
2-Naphthylamine-4,8 disulfonic acid (see Cassella acid).		
2-Naphthylamine-1-sulfonic acid (see Tobias acid).		
Neatsfoot oil, 20°F, t.l., f.o.b. works dms ... lb.	.52	-
tanks, f.o.b. works ... lb.	.47	-
30°F, t.l., f.o.b. works ... lb.	.52	-
tanks, f.o.b. works ... lb.	.44	-
40°F, dms., t.l., f.o.b. works ... lb.	.48	.49
tanks, f.o.b. works ... lb.	.39	-
Delivered prices apply on shipments within 300-mile radius of Philadelphia, Pa.; other areas, 1¼c. higher; Texas, 2c. higher and West Coast 3c. higher.		
Neomycin sulfate, USP, non-sterile, dms., 50-kilo. lots, activity basis, divd ... kilo	75.00	-
Neopentyl glycol, slurry, 90%, c.l., t.l., divd ... lb.	.522	-
powder, flake, bgs. t.t., divd. . lb.	.598	
Nerol, tech., dms ... lb.	5.30	5.75
perf. grade, dms ... lb.	4.60	6.00
Neroli oil, Tunisian, bots. ... kilo	2,700.00	-
Nerolidol syn. 55-gal. dms ... lb.	7.05	-
Nerolin, Bromelin ... kilo	7.22	-
Niacinamide, USP, t.l. dms ... kilo	8.00	-
Niacin NF, dms., 5,000 kilos or more, divd ... kilo	7.60	-
feed-grade, 98-99.5%, bgs., same basis ... kilo	6.10	6.50
Nickel acetate, dms., 5,000-lbs. to t.l., divd. E. ... lb.	1.82	-
Nickel carbonate, dms., bgs., 5,000-lbs. to t.l., divd. E. ... lb.	3.45	-
Nickel chloride, bgs., 10,000-lbs. to t.l., divd. E. ... lb.	1.18	-
Nickel fluoborate, liq. conc., dms., t.l., divd. E. ... lb.	1.25	-
Nickel metal, electro cathodes, cs., works ... lb.	3.46	-
Nickel nitrate, dms., bgs., t.l., divd. E. ... lb.	1.18	-
Nickel oxide, 75%-78% Ni, dms., 500-lb. lots, f.o.b. works ... lb.	2.80	-
Nickel sulfate, bgs., t.l., divd. E. ... lb.	.80	.90
Nicotinic acid (see Niacin).		
Nicotinamide (see Niacinamide).		
Nitric acid, 36° Be., 38°Be, 40°Be, 42°Be. tanks, c.l., works NF, 100% basis ... ton	195.00	-
94½% to 98% HNO_3, tanks, works, 100% basis ... ton	280.00	-
o-Nitroaniline, flake, dms., t.l. works ... lb.	1.51	-
molten, refd., tanks, works ... lb.	1.44	-
molten, tech., works ... lb.	1.37	-
o-Nitroaniline, orange toner, bgs., frt. alld ... lb.	1.90	-
p-Nitroaniline, dms., c.l., f.l., 30,000 lb. min., works ... lb.	1.63	-
o-Nitroanisole, 100-kilo lots ... kilo	8.75	-
Nitrobenzene, tanks, f.o.b. ... lb.	.33	.34
o-Nitrochlorobenzene, dms., t.l., c.l., f.o.b. ... lb.	.82	-
tanks, same basis ... lb.	.74	-
2-Nitro-p-cresol, tech., dms., t.l., frt. alld ... lb.	1.75	-
Nitroethane, tanks, divd. E. ... lb.	2.60	-
Nitrogen solutions, direct application, over 32% N, and mgf. type, works ... unit-ton.	1.20	-
direct application, 19-32% N ... unit-ton.	1.26	1.48
Nitrogenous sewage sludge, processed, bulk, f.o.b. Chicago ... unit ton.	4.10	-
NOTE: Price is per unit NH_3 plus $1, per unit s.p.a. bulk, f.o.b. producer's works, Chicago.		
Nitrogenous tankage, processed, bulk, per unit-ton NH_3, f.o.b. Carrollville, Wisc. ... unit ton	7.00	-
f.o.b. Forbes, Mo. ... unit ton	6.75	-
expanded, bulk, c.l., per unit-ton N, f.o.b. Forrestdale, R.I. unit ton	6.35	-
Nitromethane, dms., t.l., divd. E. ... lb.	2.37	-
o-Nitrophenol, dms., f.o.b. works .. lb.	1.00	-
p-Nitrophenol, dms., c.l., f.o.b. works ... lb.	1.05	1.45
2-Nitropropane, tanks, frt. alld. E. ... lb.	.55	-
m-Nitrotoluene, tech., dms., frt. alld. lb.	1.15	-
o-Nitrotoluene, dms., c.l., f.o.b. ... lb.	.65	-
tanks, same basis ... lb.	.48	.57
p-Nitrotoluene, tech. dms., c.l., works ... lb.	.63	.65
tanks, works ... lb.	.70	-
Nonylphenol, tanks, f.o.b. E. of Rockies, min. frt. alld ... lb.	.49	.53½
Norephedrine hydrochloride (see Phenylpropanolamine hydrochloride)		
Nutmeg oil, dist., East Indian, NF, dms ... kilo	32.00	34.00
Nutmegs, East Indian, whole ... lb.	3.15	-

O

Ochre (see Iron oxide, yellow, nat.)		
Ocotea cymbarum oil dms ... kilo	5.15	5.20
Ocotea, Chinese 90% ... kilo	5.25	-
1-Octadecanol, syn., tanks, f.o.b. ... lb.	.43½	-
1-Octanol, syn., tanks, f.o.b. ... lb.	.70	-
n-Octane, 67% min., tanks, f.o.b. Houston, Tex. ... gal.	6.25	-
Octyl alcohol, perfumer's grade, bots., cns ... lb.	1.40	1.75
n-Octyl, n-decyl phthalate, tanks, divd ... lb.	.33½	.37
tert-Octylamine, dms., c.l., t.l., works.	2.80	-
Octylphenol, molten, f.o. works ... lb.	.75	.76½
Oiticica oil, liq. dms ... lb.	.40	-
tanks ... lb.	.32	-
Oleic acid, dbl.-dist. (white), dms ... lb.	.46	.59
tanks ... lb.	.38	.44
Oleic acid, s.d. (red) dms ... lb.	.43	.49
tanks ... lb.	.35	.41

CHEMICAL PRICES

WEEK ENDING OCT 31, 1986

Oleum (see Sulfuric acid, fuming).		
Olibanum gum, tears, bgs ... lb.	2.10	-
Olive oil, edible, Spanish, dms ... gal.	8.00	-
Italian B-type ... gal.	5.40	5.50
Olivine, crude, works ... ton	12.00	-
20 mesh. works ... ton	15.00	-
100 mesh. works ... ton	20.00	-
Opium, USP, gran. powd. 25-kilo bls ... kilo	125.00	-
Orange oil, expressed, USP, Calif., dms., f.o.b. plant ... lb.	1.20	-
expressed Valencia, dms ... lb.	1.00	1.20
Calif., dist., cns. f.o.b. plant ... lb.	.90	1.00
Florida, dms ... lb	.60	.80
Brazilian ... kilo	1.00	-
West Indian, bitter, NF X, cns., dms ... lb.	13.00	-
Orange peel, bitter, Haitian bls ... lb.	.38	-
Oregano, Greece, 30M ... lb.	2.80	-
Turkey ... lb.	2.80	-
Mexico ... lb.	1.05	-
Origanum oil, Spanish, cns ... kilo	35.00	-
Orris root, Florentine, bls ... lb.	4.00	-
powd., bbls., bxs ... lb.	4.60	5.00
Verona bls ... lb.	3.00	-
powd., bbls., bxs ... lb.	4.60	5.00
Ouricury wax, refd., pure, bgs ... lb.	3.25	3.35
Oxalic acid, bgs., c.l., works ... lb.	.44	-
b-Oxynaphthoic acid dms. works, tech ... lb.	2.65	-
Oxyquinoline base, pure, 1,000 lbs., frt. alld ... lb.	8.00	-
Oxyquinoline sulfate, 100 lbs. frt. alld ... lb.	4.00	-

P

Palladium metal, works ... Troy-oz.	130.00	-
Palm oil, (see Oils, Fats & Waxes Market Report)		
Palm oil acid, dbl-dist. dms ... lb.	.31½	-
tanks ... lb.	.30	-
s.d., dms ... lb.	.42	.45
tanks ... lb.	.35	-
Palm kernel oil, bulk, c.i.f., U.S. ports ... lb.	.16½	.19¼
Palmarosa oil, Indian dms ... kilo	42.00	-
Palmitic acid, 80%, tech., bags ... lb.	.53	-
tanks ... lb.	.51	-
Papaverine hydrochloride, NF powd., imp. bulk ... kilo	56.00	-
Paprika, Hungarian, 100 AU bgs. . lb.	.80	-
Spanish, 110 AU bgs ... lb.	.90	-
Paraffin, fully-refd., 127-130 F., ASTM, tanks, refy ...	.29	.35
130-135 F., ASTM, tanks, refy.	.33½	.39
140-145 F., ASTM, tanks, refy.	.35	.41½
150-155 F., ASTM, tanks, refy.	.41½	.46
slack wax, 5% oil, tanks refy ...	.19	-
12% oil, tanks refy ...	.21	-
20% oil, tanks refy ...	.16	-
AMP temperatures are an arbitrary 3F higher than ASTP.		
Paraformaldehyde, 91%, flake, bgs, c.l., t.l., divd ... lb.	.29½	-
95%, powd., bgs., c.l., t.l. divd. lb.	.39½	-
Paraldehyde, tech., 98%, 55-gal. dms., t.l., divd. E. ... lb.	.76½	-
tanks, divd. E. ... lb.	.56½	-
Parathion, ethyl, dms., frt. alld ... lb.	1.75	-
Parathion methyl (see Methyl parathion).		
Para toner red, bbls ... lb.	3.75	-
chlorinated, (red 4) kgs ... lb.	3.75	-
Patchouli oil, Indonesian., dms ... kilo	16.50	20.00
Patchouli oil, Chinese ... kilo	19.00	21.00
Peach kernel oil, USP (see Apricot kernel oil).		
Peanut meal (see Oils, Fats & Waxes market report).		
Peanut oil (see Oils, Fats & Waxes market report).		
Pectin dom., NF, citrus, powd., 100-kilo lots divd ... lb.	3.30	3.70
Pelargonic acid, nat., tanks, min. frt. alld ... lb.	.70	-
syn., tanks, f.o.b. frt. alld ... lb.	.70	-
Penicillin, potassium, non-sterile, 200-billion-unit lots ... billion units	25.00	30.00
Penicillin, procaine, sterile 50-billion-unit lots, bulk ... billion units	36.00	-
Pennyroyal oil, dms ... lb.	10.25	-
Pentachlorophenol, 50-lb. bgs., t.l., f.o.b. Wichita, Kan. ... lb.	.65	-
Pentaerythritol, tech., bgs., c.l., f.o.b., frt. alld ... lb.	.71	.72
Pentaerythritol, di- and tri-isomers (see Dipentaerythritol and Tripentaerythritol).		
Pentaerythritol triacrylate, t.l. dms., f.o.b. works ... lb.	1.60	-
Pentobarbital, dms., 100 lbs. or more, frt. alld ... lb.	7.00	-
Pentobarbital-sodium, dms., 100 lbs. or more, divd ... lb.	14.00	-
Pentylene tetrazol, NF, dms., 200-kilo lots ... kilo	82.00	-
Pepper, black, Brazilian, bgs ... lb.	2.28	-
Lampong, bgs ... lb.	2.30	-
Malabar, bgs ... lb.	2.28	-
Tellicherry, bgs ... lb.	2.35	-
Pepper, red Chinese Fukien rice bgs lb.	.88	-
Hainan, bgs ... lb.	1.00	-
Liling, bgs ... lb.	.76	-
Indian, S-4, bgs ... lb.	.70	-
Pakistan, dundicuts, bgs ... lb.	.43	-
Pepper, white, Muntok, bgs ... lb.	3.05	-
Peppermint leaves, imp., dms ... lb.	2.65	-
Peppermint oil, Madras ... lb.	14.00	-
Midwest ... lb.	15.00	-
Willamette ... lb.	11.00	-
Yakima ... lb.	8.00	-
syn., dms. f.o.b. works ... lb.	7.00	9.00
Brazilian ... kilo	6.50	-
Chinese ... kilo	6.90	-

CHEMICAL PRICES

WEEK ENDING OCT 31, 1986

Perchloroethylene, dry cleaning grade, distr., tanks, divd ....lb.	.28½	–
Indust., grade, consumers, tanks, divd ....lb.	.31	–
Peracid dms ....lb.	2.55	–
Permanent red 2B, (red 48), calcium salts, dms., frt. alld. ....lb.	5.25	–
barium salts, same basis ....lb.	5.25	–
Peru balsam, f.o.b. ....lb.	3.25	–
Petitgrain oil, Paraguay ....lb.	5.00	–
Petrolatum, USP, snow white, dms., c.l., refy ....lb.	.375	–
tanks, refy ....lb.	.310	–
USP, soft white, dms., c.l., refy. ..lb.	.375	–
tanks, refy ....lb.	.310	–
USP, lily white, dms., c.l., refy ....lb.	.370	–
Petrolatum, USP, Lily white, tanks, refy ....lb.	.305	–
USP, cream, dms., c.l., refy ....lb.	.365	–
tanks, refy ....lb.	.30	–
USP, soft yellow, dms., c.l., refy. ..lb.	.350	–
tanks, refy ....lb.	.285	–
USP, amber, dms., c.l., refy. ....lb.	.345	–
tanks, refy ....lb.	.280	–
Petroleum pitch (see Asphalt, petroleum).		
Petroleum sulfonate, 60-62%, sulfonic cont., HMW, bulk, works ..lb.	.48¼	.46
MMW, same basis ....lb.	.46	–
LMW, same basis ....lb.	.49	.49¼
Prices for 51% sulfonic content 2c per lb. lower on corresponding molecular wts.		
Phenacetin USP, powd., 200-lb. dms., 1,000-lb. lots, divd. ....lb.	2.20	–
100-lb. dms., 1,000-lb. lots, divd. lb.	2.22	2.45
p-Phenetidine, dms., c.l., f.o.b. ....lb.	2.00	–
Phenobarbital, USP, dms., 500-kilo lots., f.o.b. works ....kilo	16.50	–
Phenobarbital-sodium, NF, 500-kilo lots, f.o.b. works ....kilo	27.00	–
Phenol, syn. tanks, frt. equald. ....lb.	.25	.29
p-Phenolsulfonic acid, 65% sol'n., dms., c.l., fob works ....lb.	.64	–
tanks, same basis ....lb.	.56	–
Phenothiazine, indust. grade, 50-lb. bags, c.l., f.o.b. works ....lb.	2.33	–
purif. grade, same basis ....lb.	2.69	–
Phenyl acetate, dms., 100-lb. lots, works ....lb.	1.04	–
Phenylacetic acid, pure cryst., 25-lb. cns. ....lb.	4.50	–
dl-Phenylalanine, dms., 25-kilo lots ....kilo.	64.00	–
1-Phenyl-3-carbethoxy pyrazolone-5, dms. 200-lb. lots, divd E. ..lb.	3.45	–
m-Phenylenediamine, cast, dms., c.l., t.l., f.o.b. works ....lb.	2.07	–
o-Phenylenediamine, flaked, dms., t.l., f.o.b. works ....lb.	3.25	–
p-Phenylenediamine, flaked, dms., f.o.b. works ....lb.	4.00	–
Phenylephrine hydrochloride, USP 100-kilolots or more ....kilo.	175.00	165.00
Phenylethyl acetate, dms. ....lb.	3.35	–
2-Phenylethyl alcohol, NF, dms. ....lb.	2.10	2.20
b-Phenylethylamine, dms., 30,000 lbs or more, frt. alld ....lb	1.50	–
Phenylethylphenyl acetate, 25-lb. cns. ....lb.	5.50	6.80
Phenylglyconic acid (see Mandelic acid).		
Phenylhydrazine, 69% min., dms ..lb.	3.50	–
1-Phenyl-3-methyl-5-pyrazolone, dms., 250-lb. lots divd. E ..lb.	1.80	–
o-Phenylphenol, dms, t.l., works ..lb.	1.35	2.00
p-Phenylphenol, bgs, f.l., 40,000 lbs. or more, works ....lb.	1.85	–
Phenylpropanolamine hydrochloride, 100-kilo dm. ....kilo	24.00	26.00
Phenylsalicylate, purif. cryst., dms., E. ....lb.	2.75	–
tech., cryst., E ....lb.	2.25	–
flake, E ....lb.	2.35	–
Phloxine toner (red 90), dms., frt. alld. ....lb.	1.65	2.05
Phosgene, 1-ton ret. cyls., 5 to 9-cyl. quantities, works ....lb.	.55	.67
Phosphate rock, Fla., land pebble, run of mine washed, 66-68% b.p.l. bulk c.l. mines ....ton	23.15	–
vessel, Tampa, same basis ....ton	28.00	–
Phosphoric acid, com'l. and tech. grades, 75% tanks, works ....100 lbs.	29.00	–
80% tanks, works ....100 lbs.	31.00	–
85% NF tanks, f.o.b. freight equald. ....100 lbs.	33.50	–
Food grade prices $2.00 above tech. grade.		
Phosphoric acid, agricultural grade, 52-54% a.p.e., tanks, works ....unit-ton	3.10	–
super, min 70% a.p.a., same basis ....unit-ton.	3.45	–
Phosphorus, white (yellow) solid dms., c.l., works, frt. equald ....lb.	1.00	–
tanks, works, f.o.b. works. ..lb.	.91	–
Phosphorus oxychloride, tanks, frt. equald ....lb.	.40	–
Phosphorus pentasulfide, powd., dms., c.l., works ....100 lbs.	50.00	–
tote bins, sellers ....100 lbs	45.00	–
Phosphorus pentoxide, dms., t.l., works ....lb.	.62	–
Phosphorus sesquisulfide, dms, cvs, c.l., works ....lb.	.38	–
Phosphorus trichloride, dms., c.l., works ....lb.	.40	–
tanks, works ....lb.	.35	–
Phthalic anhydride, flake, c.l., t.l., dms., frt equald. ....lb.	.30	–
molten, tanks, same basis ....lb.	.27	–
Prices 1-1½c. per lb. higher on the West Coast		
Phthalimide flake, works ....lb.	.85	–
Phthalocyanine blue toner, red shade, bbls, frt. alld E of Rockies ....lb.	6.10	6.50
green shade, same basis ....lb.	6.40	9.50
resinated, bbls., same basis ....lb.	6.20	9.75
Phthalocyanine blue toner, water dispersable, bbls., same basis ....lb.	7.05	7.75
Phthalocyanine green toner, all grades, bbls., frt. alld. E. of Rockies ....lb.	8.10	10.10
Phthalocyanine green toner, resinated, bbls., same basis ....lb.	7.45	8.20
Phthalylsulfacetamide, dms., 500-kilo lots ....kilo.	6.61	–
Picolines, refd, mixed, bulk ....kilo	2.61	–
Picric acid, pure paste, 25-lb. ctns., c.l., dry basis, f.o.b. Charlotte, N.C. ....lb.	6.00	–
tech., paste, 25-lb. ctns., t.l., dry basis, f.o.b. Charlotte, N.C. ..lb.	5.00	–
Pigment green B, kgs ....lb.	2.20	–
Pilocarpine hydrochloride, USP, dms. ....kilo.	1,500.00	2,000.00
Pimento see Allspice		
Pimento leaf oil, dms. ....lb.	13.80	–
Pine oil, 80% min. alcohol content, bulk, f.o.b. works ....100 lbs	47.00	53.00
dms., c.l., f.l., same basis ....100 lbs	51.00	54.00
a-Pinene, perfume grade ....kilo	1.62	–
tech. grade ....lb.	.16	.23
b-Pinene, perfumery grade. tanks ..kilo	2.30	–
tech. grade. tanks ....lb.	.35	.40
Piperazine, anhyd., dms., t.l., frt. alld. E. ....lb.	1.60	–
Piperazine citrate, 36%, dms., 1,100-lb. lots, frt. alld. ....lb.	2.25	2.36
Piperazine dihydrochloride, 53%, dms., t.l., frt. alld. ....lb.	2.00	–
Piperazine hexahydrate, 44%, dms., 1,100-lb. lots, frt. alld. ....lb.	1.60	–
Piperazine phosphate, 42%, dms., t.l., frt. alld. ....lb.	1.80	–
Piperidine dist. 98% min., dms., c.l., t.l., works ....kilo.	6.92	–
Piperonyl butoxide dms., divd. E. ..lb.	5.00	–
Platinum, metal, works ....Troy oz.	573.00	–
Polycarbonate resin, pellets, nat., t.l., frt. alld ....lb.	1.64	1.66
Polyester resin, unsaturated, g.p., orthophthalic, bulk, tankcars, frt. alld ....lb.	.51	.53
isophthalic, same basis ....lb.	.56	.62
Polyethylene resin, high-density, blow molding, g.p., hopper cars, frt. alld. ....lb.	.44	.52
injection molding, g.p., hopper cars, frt. alld. ....lb.	.43	.46
extrusion, g.p., hopper cars, same basis ....lb.	.47	.46
wire and cable, nat., hopper cars, same basis ....lb.	.54	.65
wire and cable, black, same basis ....lb.	.65	.75
Polyethylene resin, low-density, film liner, hopper cars, frt alld ..lb.	.35	.38
clarity film, hopper cars, frt., alld. ....lb.	.35	.37
pallet shrink film, hopper cars, same basis ....lb.	.35	–
extrusion coating, hopper cars, same basis ....lb.	.36	.42
g.p., hopper cars, same basis ..lb.	.37	.38
Polyethylene linear low-density g.p. resin	.36	.40
blown film resin	.40	.43½
cast film resin	.40	.45
Polyethylene resin, low-density injection molding, g.p., hopper cars, same basis ....lb.	.45	.46
line wire, CATV, power cable ..lb.	.70	1.15
wire and cable thermoplastic high-voltage, natural color, same basis ....lb.	.80	.90
wire and cable, XLPE low voltage, 14% carbon black, same basis ....lb.	.66	.73
wire and cable jacketing, black lb.	.60	.61
Polymyxin sulfate, USP, bulk, 50-billion units min. ....million units	.52	–
Polyoxyethylene sorbitan monostearate, dms., 20,000-lb. lots, works ....lb.	.73	–
Polyoxyethylene sorbitan tristearate, dms., 20,000-lb. lots, works ....lb.	.73	–
Polypropylene resin, homopolymer, g.p., nat., t.l., frt. alld ....lb.	.45	.48
copolymer, med. impact, nat ....same basis ....lb.	.50	.56
high impact, same basis ....lb.	.53	.60
Colored material 6c. per lb. higher for each grade.		
Polystyrene resin, cryst., nat., hopper cars, frt. alld. ....lb.	.47	–
impact, nat., hopper cars, same basis ....lb.	.48	.50
high heat, high impact, nat., hopper cars, same basis ....lb.	.46	.52
expandable beads (EPS), pkging grade, 1,000-lb. lots ....lb.	.69	–
modified, same basis ....lb.	.71	.73
Polyvinyl alcohol, fully hydrolyzed, medium viscosity, bgs., t.l., divd ....lb.	1.00	1.05
partially hydrolyzed, medium viscosity, bgs., t.l., divd ....lb.	1.05	–
Polyvinyl chloride resin, g.p. homopolymer dispersion, bgs., t.l., divd ....lb.	.50	–
g.p. suspension, bulk, same basis ....lb.	.38	–
pipe grade, bulk, same basis ....lb.	.47	–
film grade, bulk, same basis ....lb.	.37	.47
Polyvinyl chloride, g.p. copolymer dispersion, same basis ....lb.	.56	.61
g.p. copolymer suspension, same basis ....lb.	.45	.49
Poppyseed, Dutch, bgs. ....lb.	.59	–
Turkey, bgs. ....lb.	.53	–
Potash agricultural (see Potassium muriate).		
Potash, caustic, liq., 45% basis, tanks, works ....100 lbs.	13.00	–
West Coast, 50% basis, tanks, ex terminal ....100 lbs.	16.08	–
reg. flake, 88-92%, 400-lb. dms., c.l., works ....100 lbs.	42.35	–
Potassium acetate, NF, gran., dms., t.l. works E ....lb.	.90	1.31
Potassium bicarbonate, tech., gran., bgs., c.l., works ....lb.	.61½	–
Potassium bicarbonate, USP, gran., dms., t.l. ....lb.	.72	–
Potassium bichromate, gran., 400-lb. dms., c.l., t.l., works ....lb.	.46	–
Potassium bifluoride, tech., dms., t.l., works, frt. equald ....lb.	.45	.49
Potassium bitartrate, NF, gran., powd., bgs. ....lb.	.90	1.20
Potassium borohydride, powd. dms., 100-1,000 lbs., works ....lb.	16.00	20.00
Potassium bromate, gran., powd., 200-lb. dms., c.l., f.o.b. works ....lb.	1.06	–
Potassium bromide, NF., gran., dms., c.l. f.o.b. works ....lb.	1.12	–
Potassium carbonate, liq., 47% K_2CO_3, tanks, t.w., works ....100 lbs.	14.60	–
dms., c.l., t.l., works ....100 lbs.	20.65	–
calcined, 99-100% K_2CO_3, hopper cars or trucks, works ....100 lbs.	32.50	–
bgs., c.l., t.l., works ....100 lbs.	35.20	–
drums ....100 lbs.	36.40	–
Potassium carbonate, gran., purif., 400-lb. dms., 5-dm. lots ..lb.	.40	.46
Potassium chlorate, cryst., dms., c.l., works ....lb.	.14½	–
powd., dms., c.l., works ....lb.	.30	–
purif., gran., 325-lb. dms. f.o.b. shipping point ....lb.	.40	–
Potassium chloride, chemical grade, 99.95% KCl, bulk, c.l., f.o.b works ....ton	105.00	–
USP cryst. dms. ....lb.	1.12	–
USP gran., dms. ....lb.	.57	–
USP powd., dms ....lb.	.57	–
Potassium chloride, agricultural (see Potassium muriate).		
Potassium chromate, purif., cryst., dms., works ....lb.	.57	–
Potassium citrate, NF, gran., 200-lb. dms., frt. alld. ....lb.	.63½	–
Potassium cyanide, dms., 20,000-lb. lots or more, f.o.b. works ..lb.	1.32	–
Potassium dichromate (see Potassium bichromate).		
Potassium fluoborate, tech., dms., c.l., t.l., works, frt. equald ....lb.	1.40	1.42
Potassium fluoride, anhyd., dms., t.l. ....lb.	1.86	–
Potassium gluconate, dms., t.l., f.o.b. works ....lb.	1.46	–
Price W. of Denver 4c. per lb. higher.		
Potassium guaiacolsulfonate, 300-lb. dms., 600 lbs. or more frt. equald ....lb.	2.10	–
Potassium hydroxide, tech. (see Potash, caustic).		
Potassium hydroxide, USP, pellets, 100-lb. dms., c.l., t.l., works, frt. equald ....lb.	1.29	1.31
Potassium iodide, USP, gran., cryst., dms., 1,000-lb. lots divd ..lb.	10.72	12.38
ACS grade truckload ....lb.	11.32	13.55
Potassium-magnesium sulfate, std., bgs., works ....ton	59.00	–
basis 40% K_2SO_4 and 55% $MgSO_4$, bulk, works ....ton	97.00	–
Potassium metabisulfite, gran., dms. t.l. ....lb.	.44	–
Potassium muriate, 60-62.4% min. K_2O, std., bulk, c.l., frt. equald., f.o.b. Sask., Canada ....ton	44.00	45.00
soluble, fine std., f.o.b. Sask. ....ton	47.00	–
coarse, f.o.b. Sask. ....ton	46.00	50.00
gran., f.o.b. Sask. ....ton	50.50	51.50
Potassium nitrate, fert. grade, std., 50-ton c.l., divd. SE ....ton	267.00	274.00
prilled ....ton	277.00	294.00
tech., gran., bgs., c.l., min. 50 tons, divd ....ton	470.00	–
Potassium oxalate, neutral tech., fine gran., powd., 300-lb. dm., frt. equald ....lb.	2.54	–
Potassium pentaborate, gran., bgs., c.l., works ....lb.	1.01	–
dms., same basis ....lb.	1.06	–
Potassium pentaborate powder 15c. per lb. higher.		
Potassium perchlorate, dms. c.l., works ....lb.	.79	–
Potassium permanganate, free flowing, bulk, hopper trucks, works ....lb.	1.09	–
50-kg. dms., same basis ....lb.	1.20	–
150-kg. dms., same basis ....lb.	1.17	–
Potassium permanganate, USP, 50-lb. kgs., works, c.l., t.l. ....lb.	1.38	–
Potassium persulfate, 225-lb. dms., 24,000 lbs. or more, f.o.b. plant ....cwt.	76.60	–
c/tl same basis ....cwt.	72.50	–
Potassium pyrophosphate tetrabasic, bgs., c.l., t.l., works, E., frt. equald ....100 lbs.	43.75	47.25
bulk, same basis ....100 lbs.	46.00	46.50
Potassium salicylate, USP, gran., 200-lb. dms., 2,000 lbs. or more, works frt. alld ....lb.	1.52	–
USP, powd., 300-lb. dms., 2,000 lbs. or more, same basis ....lb.	1.42	–
Potassium silicate, soln., 26.6-30.2 Be., 2.5 ratio, t.c., t.t., works ....100 lbs.	19.90	–
dms., c.l., t.l., works. 100 lbs.	25.90	–
Potassium silicate, 40-40.5 Be., 2.1 ratio, t.c., t.l., works ....100 lbs.	25.05	–
40-40.5 Be., 2.1 ratio, dms., c.l., t.l., works ....100 lbs.	32.05	–
Potassium silicate, electronics grade, 30-30.4 Be., 2.1-2.2 ratio, t.c., t.l., works ....100 lbs.	28.10	–
dms., c.l., t.l., works. 100 lbs.	33.10	–
solid or glass, 2.15 ratio, dms., c.l., t.l., works ....100 lbs.	53.30	–
solid or glass, 2.5 ratio, dms, c.l., t.l., works	45.65	–
"Ratio" indicates percentage by weight of SiO_2 divided by percentage by weight of K_2O.		
Potassium silicofluoride, bgs., c.l., t.l., frt. equald ....lb.	.11½	.15
Potassium-sodium tartrate, NF, gran. or powd., dms. ....lb.	.80	1.20
Potassium sorbate, f.l. dms., divd. ..lb.	2.20	3.10
Potassium stannate, dms., frt. alld. ..lb.	N.A.	–
Potassium sulfate, agricultural grade, min. 50% K_2O std., bulk, c.l., f.o.b. works ....ton	150.00	160.00
Potassium sulfate, gran., purif. 400-lb. dm. ....lb.	.98	–
Potassium tetraborate, gran., bgs., c.l. works ....lb.	1.10	–
dms., same basis ....lb.	1.15	–
Potassium tetraborate powder 15c. per ton higher		
Potassium thiocyanate, USP, cryst., 225-lb. dms., 5-dm. lots ....lb.	4.01	–
tech., cryst., dms., t.l. ....lb.	.82	–
Potassium titanate, ctns., c.l., works ....lb.	.71¾	–
Potassium-titanium fluoride, tech., dms., t.l., works, frt. equald lb.	1.24	[illegible]
Potassium-zirconium fluoride, tech., dms., t.l., works, frt. equald ....lb.	.78	–
Prednisone USP, dms., 5 kilos or more ....gram	1.03	–
Prednisolone acetate, USP, dms., 5 kilos or more ....gram	1.12	–
Prednisolone, anhyd., USP, dms., 5 kilos or more ....gram	1.12	–
Procaine hydrochloride, USP, antibiotic grade, dms., 2,000-lb. lots, frt. alld ....lb.	4.95	5.75
Procaine hydrochloride, USP, ampule grade, dms., 1,000-lb. lots, frt. alld ....lb.	4.95	5.50
Propionaldehyde, tanks, f.o.b. ....lb.	.35½	–
Propionic acid, syn., pure, tanks, divd E. ....lb.	.33	[illegible]
n-Propyl acetate, tanks, divd ....lb.	.53½	–
n-Propyl alcohol, tanks, divd ....lb.	.42	.44
n-Propyl gallate dms., 100 to 2,000-lb. lots, divd ....lb.	11.50	–
n-Propyl-p-hydroxybenzoate, USP, 500 kilos ....kilo	10.80	–
tech., 500 kilos, f.o.b. ....kilo	10.36	–
Propyl paraben (see n-Propyl-p-hydroxybenzoate)		
Propyl thiouracil, dms., 50-kilo lots or more ....kilo.	55.00	–
n-Propylamine, dms., c.l., divd ....lb.	.75	.80
Propylene, polymer grade, f.o.b. Tex. and La. Gulf Coast points ..lb.	.17¼	–
chemical grade same basis ....lb.	.15¾	[illegible]
Propylene glycol, indust., tanks, f.o.b. lb.	.40	.41
USP, tanks, f.o.b. E ....lb.	.43	.44
Propylene glycol monomethyl ether, tanks, divd. E. ....lb.	.49	–
Propylene oxide, tanks, f.o.b. works, frt. equald ....lb.	.47½	–
Psyllium seed, USP powd bgs. ....lb.	1.50	1.75
Pumice, dom., fine, 4F-0, bgs., ton lots ....ton	270.00	–
medium, 0½-1½, bgs., ton lots ..ton	300.00	–
coarse, 2-extra coarse, bgs., ton lots ....ton	300.00	–
Pumice, imp., Italian, fines, bgs., ton lots f.o.b. East Coast ....ton	280.00	–
medium, bgs., ton lots, f.o.b. East Coast ....ton	350.00	–
coarse, bgs., ton lots f.o.b. East Coast ....ton	300.00	–
Pyrazolone red (red 38), dms., works ....lb.	5.25	5.35
Pyrethrum flowers, fine grd. 0.6% pyrethrins, ton lots, frt. alld. lb.	1.81	–
Pyrethrum, purif., 20% pyrethrins, dms., works ....lb.	37.50	37.75
Pyridine, refd., 2-deg., c.l., works dms. ....kilo	5.90	–
tanks ....kilo	5.70	–
Pyridoxine hydrochloride, USP, 100 kilos or more, divd ....kilo.	29.00	33.00
Pyrites, Canadian 48-50% S. mines ....long ton	4.50	5.00
Pyrogallic acid (see Pyrogallol)		
Pyrogallol, 100-lb. dms., 1,000-lb. lots, divd ....lb.	13.70	15.25

Q

Quessia chips ....lb.	.57	–
Quinacridone maroon, dms., frt. alld. ....lb.	20.75	[illegible]
red, dms., frt. alld ....lb.	17.75	[illegible]
scarlet, dms., frt. alld ....lb.	21.75	[illegible]
violet, dms., frt. alld ....lb.	17.75	[illegible]
Quince seed, bgs. ....lb.	2.00	[illegible]
Quinidine sulfate, USP, 1,000-oz. dms., 2,000 oz. or more ..oz.	4.20	[illegible]
Quinine hydrochloride, NF, 1,000-oz. dms., 2,000 oz. or more ..oz.	2.45	2.50
Quinine sulfate, USP XVIII, 1,000-oz. dms., 2,000 oz. or more ..oz.	2.30	2.50
Quinoline, dms., t.l., frt. equald ....lb.	1.49	–
tanks, same basis ....lb.	1.43	–

R

R salt tech., 304 molecular wt. ....lb.	2.12	–
Racemethionine, USP, 50-250 kilos ....kilo	6.80	–
250-500 kilos ....kilo	6.60	–
500 or more kilos ....kilo	6.50	–
feed grade, 69% min., c.l., t.l. ....lb.	1.07	[illegible]
Rapeseed oil, dms. ....lb.	.58½	–
Rauwolfia serpentina root, powd. bls., dms. ....kilo.	22.00	–
Red carmine, No. 40 (see Carmine No. 40)		
Red precipitate. (see Mercuric oxide, red).		
Reserpine, USP, cryst., bots. ....gram.	.40	[illegible]
Resorcinol tech., bgs., t.l., works. divd ....kilo.	3.86	–
Resorcinol, USP, cryst., dms. 50 kilos or more, works ....kilo.	6.35	–
powd. dms., same basis ....kilo.	6.90	–
Resorcinol monoacetate, dms., 1,000 lbs. or more ....lb.	1.88	–
Rhodamine red toner, molybdated, PMA, dms., works ....lb.	9.25	–
tungstated, PTMA, dms., f.o.b. ....lb.	11.50	[illegible]
works ....lb.	105.00	[illegible]
Rhodinol, 25-lb. cns. ....lb.	15.25	[illegible]
syn., dms. ....lb.	.45	[illegible]
Rhubarb root, India, whole, bgs. ....lb.	.61	[illegible]
powd., bgs. ....lb.		
Riboflavin, feed grade, 25 kilos, divd. ....kilo.	34.50	[illegible]
Riboflavin, USP, 25 kilos, divd. ....kilo.	43.00	[illegible]
Riboflavin 5-phosphate-sodium, 25-kilo lots ....kilo.	136.00	[illegible]
Rice bran oil, refined dms. t.l. ....lb.	1.25	–
Ricinoleic acid (see Castor oil acids, split).		
Rochelle salt (see Potassium-sodium tartrate).		
Roofing pitch (see Coal tar pitch, roofing.)		
Rose oil, nat., NF, Bulgarian, otto. bots. ....kilo.	5,700.00	–
Turkish, otto., bots. ....kilo.	6,500.00	7,500.00
Rosemary oil, NF, Spanish, dms. ..kilo	6.00	11.00
Tunisian, dms. ....kilo	15.00	17.50
Rotenone resin, 30-45%, 100-lb. dms. works ....unit-lb.	.21	.23

S

Saccharin NF, gran., soluble, dms. 1,000-lb. lots, frt. alld ....lb.	2.60	2.75
Saccharin NF, powd., soluble, dms., less than 20,000-lb. lots, frt. alld. ..lb.	3.75	–
Safflower oil, non-break, tanks, N.Y. ..lb.	55	–
edible dms., N.Y., divd ....lb.	.75	.76
Sage leaves, Dalmatian, No. 1, bgs. lb.	1.95	–
Albanian, bgs. ....lb.	1.65	–
Turkish ....lb.	1.25	1.30
Sage oil, Clary, French, bots. ....kilo	165.00	180.00
Dalmatian, cns. ....lb.	14.50	–
Spanish, cns. ....kilo	19.00	21.00
Salicylaldehyde, tanks, f.o.b. ....lb.	3.60	–
Salicylamide, NF, gran., powd., dms., 2,000-lb. lots, one ship. ....lb.	1.07	1.10
Salicylic acid, tech., dms., c.l., t.l., works ....lb.	1.23	1.41
USP, cryst., dms., 1,000 lbs. or more ....lb.	1.33	1.63
USP, powd., dms., 1,000 lbs. or more ....lb.	1.66	–
Salol (see Phenylsalicylate).		
Salt, evaporated, common, 80-lb. bgs., c.l., t.l., North, works ..80 lbs.	4.02	–
bulk, same basis ....ton	90.00	61.20
chemical grade, same basis ..80 lbs.	4.30	–
Salt, rock, medium, coarse, same basis ....80 lbs.	2.70	–
bulk, same basis ....ton	16.00	25.00
Saltcake, dom., bulk, works, 100% Na_2SO_4 basis, f.o.b. works E ton	65.00	98.00
same basis W ....ton	90.00	99.00
Sandalwood oil, E. Indian ....kilo	195.00	–
Indonesia ....kilo	102.00	–
Sarcosine, tech., tanks, works, frt. equald ....lb.	.50	–
Schaeffer's salt, paste, dms., 100% basis, works ....lb.	2.59	–
Scopolamine hydrobromide, USP, 100-oz. lots bots. ....oz.	35.00	46.50
Sebacic acid, CP, bgs., c.l., works ..lb.	1.95	–
purif., bgs., c.l., works ....lb.	1.94	–
Seidlitz mixture, dms., 5,000-lb. lots. lb.	.30½	–
Selenium, powd., 99.99% Se, dms., divd ....lb.	13.00	–
coml. 99.5% Se, same basis ....lb.	10.00	15.00
Senna leaves, Alexandria, whole and half, bls. ....lb.	.75	.80
Tinnevelly, No. 1, bls. ....lb.	.70	.71
powd., bbls., bxs. ....lb.	.90	1.10
Sesame oil, USP, dms., t.c.l. ....lb.	1.00	1.20
Sesame seed, Central American, hulled, bgs. ....lb.	.55	.56
Sienna pigment, burnt, paper bgs., l.c.l., works ....lb.	.16½	.26½
raw, paper bgs., l.c.l., works ....lb.	.16¼	.23¼
Silica, amorph., dry-grd., bgs., c.l., works 93%, 200 mesh ...ton	31.00	32.50
98%, 200 mesh ....ton	32.00	33.50
93%, 97%, 325 mesh ....ton	34.50	35.50
99.5%, 325 mesh ....ton	37.00	–
99.5%, 325 mesh ....ton	51.50	54.50
Silica, dry-grd., bgs., c.l., works, 99.9%, 400 mesh, micronized ....ton	72.00	75.50
99% under 15 microns, micronized ....ton	76.50	62.50
99% under 10 microns, micronized ....ton	104.00	105.00
Silica, hard-quartz, 99.5% SiO_2, 325 mesh, bgs., c.l., works ...ton	37.00	–
140 mesh, bgs., c.l., works ...ton	34.75	–
Silicon tetrachloride, tech., dms., c.l., works ....lb.	.60	–
tanks, works ....lb.	.38	–
Silver bullion, ingots, ce., Troy ....oz.	5.845	–
Silver cyanide, 80% Ag, 500-oz. lots oz.	4.50	–
Silver nitrate, ACS, 63.2 Troy oz. AG/100 avoir. oz. $AgNO_3$ ....oz.	3.37	–
Soapbark, crushed, bls. ....lb.	1.00	–
powd., bls. ....lb.	1.35	1.65
Soda ash, dense, 58%, 100-lb., paper bgs. c.l., works, f.o.b. ...ton	120.00	–
bulk, c.l., same basis ....ton	83.00	–
light 58%, 100-lb., paper bgs., c.l., same basis ....ton	150.00	–
bulk, c.l., same basis ....ton	123.00	–
Soda, caustic, liq., 50%, sellers tanks, Gulf Coast works, f.o.b., frt. equal, 76% Na_2O ....ton.	175.00	195.00
73%, same basis ....ton.	205.00	225.00
flake, 76%, 400-lb. dms, c.l., works ..ton.	500.00	570.00
solid, 76%, 700-lb. dms, c.l., works ....ton.	520.00	570.00
gran., 75%, 460-lb. dms, c.l., works ....ton.	520.00	–
beads, 76%, 400-lb. dms., c.l., works ....100 lbs.	27.50	28.50
Prices for liq. rayon-type, $15 ton higher. Prices in West 70c. higher for solid, and $20-$30 ton higher for gran. and beads.		
Soda, sal, conc., bgs., c.l. works ....100 lbs.	3.35	3.65
Sodium acetate, anhyd., bgs., c.l. f.o.b. works ....lb.	.54	–
Sodium acetate, USP, 90%, gran. 100-lb. dms, c.l. works ....lb.	.57	–
Sodium alginate, NF, white powd., dom., 300 lbs. or more ....lb.	6.00	8.75
Sodium p-aminosalicylate, dms., 100-lb. lots or more, f.o.b. works ....lb.	4.73	–
Sodium antimonate, bgs., c.l., divd E. lb.	1.46	1.60
Sodium ascorbate, USP, dms., 100 kilos ....kilo.	9.30	10.50
Sodium benzoate, tech., bgs., c.l., t.l., frt. alld. ....lb.	.70½	–
Sodium benzoate, USP, 50-lb. bgs., c.l., t.l., frt. alld ....lb.	.63½	–
tonlots, same basis ....lb.	.66½	–
100-lb. dms., c.l., t.l., same basis. lb.	.69	–
ton lots, same basis ....lb.	.92	–
Sodium bicarbonate, USP, powd., reg. grade, bgs., c.l., t.l., works, frt. equald ....100 lbs.	17.05	–
coarse, same basis ....100 lbs.	18.05	–
fine, same basis ....100 lbs.	17.20	–
gran., same basis ....100 lbs.	17.65	–
gran., fine, same basis ....100 lbs.	17.60	–
Sodium bichromate, gran., bgs. c.l., t.l., works, frt. equald ....lb.	.57	–
Sodium bifluoride, 400-lb. dms., c.l., frt. equald ....lb.	.76	–
100-lb. bgs., c.l., same basis ....lb.	.76	–
Sodium bisulfate, bulk, c.l., works ...ton	175.00	–
dms., c.l. ....100 lbs.	13.00	–
Sodium bisulfite, anhyd. bgs., c.l., t.l., works, East ....100 lbs.	26.50	–
works, West ....100 lbs.	32.00	–
Sodium bisulfite, soln., 36%, bulk, 100% basis, works, East ....100 lbs.	20.60	–
soln., 100%, bulk, works, West 100 lbs.	20.00	–
photographic grade, 43% soln., works ....100 lbs.	21.90	–
Sodium borate NF, gran., bgs., c.l., works ....lb.	.51	–
powd., same basis ....lb.	.52	–
Sodium borohydride, powd., dms., 1000-5000 lbs. works ....lb.	19.66	21.90
Sodium borohydride, stabilized water soln., 12% $NaBH_4$, 100% basis, 3000 gal. tankwagon, works. lb.	17.45	–
Sodium bromide, 99%, gran., 400-lb. dms., f.o.b. works ....lb.	1.04	–
Sodium carbonate, decahydrate, bgs, c.l., t.l., works ....ton.	264.00	–
Sodium carbonate, cryst. monohydrate (see Soda, ash)		
Sodium carbonate, monohydrated, bgs., c.l., t.l., works ....ton	392.00	–
Sodium carboxymethyl cellulose (see CMC.)		
Sodium chlorate, crystal, bulk, t.c., t.l., delivered, N.E. ....ton	330.00	–
delivered, S.E. ....ton	335.00	–
Sodium chlorate, cryst., 450-lb. dms., c.l., works. E ....lb.	.27	–
Sodium chloride, tech. (see Salt.)		
Sodium chloride, USP, gran., bgs. ..lb.	.29	–
Sodium chlorite, tech., dms., c.l., works ....lb.	1.17	1.27
Sodium chromate, anhyd., dms., c.l., t.l., works ....lb.	.67	–
Sodium chromate, tetrahydrate, bgs., c.l., t.l., works ....lb.	.84	–
Sodium citrate, gran., anhyd., 200-lb. dms., c.l., t.l., N.Y. ....lb.	1.95	–
Sodium citrate, USP, gran., dihydrate, 100-lb. bgs., t.l., f.o.b. shipping point ....lb.	.74½	–
Sodium cyanate, dms. 1,000-lb. lots, works ....lb.	.65	–
Sodium cyanide, briquettes or gran., 99% min., 200-lb dms, min, divd ....lb.	.71	–
Sodium diacetate, anhyd., dms., c.l., works ....lb.	.66	–
Sodium diacetate, FCC, 50-lb bgs., t.l., divd. E. of Rockies ....lb.	.51	.67
Sodium diacetate, tech., 50-lb. dms, c.l., works ....lb.	.52	–
Sodium erythorbate, powd., gran., t.l or mixed t.l., f.o.b. shipping point ....lb.	2.60	2.65
Prices W. of Denver 2c. per pound higher.		
Sodium ferrocyanide, bgs, t.l., works ....lb.	.60	–
Sodium fluoborate, tech., gran., dms., t.l., works, frt. equald ....lb.	1.77	–
Sodium fluoride, white, 97%, 400-lb. dms, c.l, works, frt. equald. lb.	.6345	–
100 bgs., c.l., same basis ....lb.	.50	–
USP powd., 200-lb. dms., f.l., f.o.b. shipping point ....lb.	4.69	–
Sodium formate, bgs., c.l., works ..lb.	.20	–
Sodium gluconate, tech., 50-lb. bgs., 2,500 lbs. or more frt. alld. lb.	.60	–
Sodium hydride, oil dispersion, 90% NaH, 167-lb. dms., 10 dms., works ....lb.	1.66	–
Sodium hydrosulfide. (see Sodium sulfhydrate.)		
Sodium hydrosulfite, dms., c.l., t.l., f.o.b. shipping point E ....lb.	.64	–
Sodium hydroxide, USP, pellets, 100-lb. dms., c.l., t.l., works, frt. equald ....lb.	.65	.98
Sodium hydroxide, tech. (see Soda, caustic.)		
Sodium hypophosphite, EN grade, 300 lb. dms f.o.b. works ....lb.	1.425	1.50
110 lb. dms. ....lb.	1.47	1.52
Sodium hyposulfite (see Sodium thiosulfate).		
Sodium iodide, USP, cryst., 300- to 500-lb. lots. dms, frt. equald ....lb.	14.72	–
Sodium lauryl sulfate, 30%, tanks, f.o.b. works ....lb.	.29	.32
Sodium lignin sulfonate, bgs., c.l., works ....100 lbs.	25.50	–
Sodium metabisulfite (see Sodium bisulfite).		
Sodium metaborate, octahydrate, gran., bgs., c.l., works ....lb.	.36	–
tetrahydrate, gran, bgs, c.l., works ....lb.	.49	–
Sodium, metallic, 12-lb. bricks, dms., c.l. works ....lb.	.93	–
fused, dms. 24,000-lb. lots or more, works ....lb.	.87	–
tanks, works ....lb.	.70	.80
Sodium metaphosphate, tech. bgs., c.l., f.o.b. shipping pt. frt. equald ....100 lbs.	61.50	–
food grade, bgs. c.l. f.o.b. frt. equald. ....100 lbs.	68.25	–
Sodium metasilicate, anhyd., bgs., c.l. works ....100 lbs.	27.25	–
bulk, c.l., works ....100 lbs.	25.30	–
pentahydrate, bgs., c.l., f.o.b. shipping point ....100 lbs.	18.95	–
bulk, c.l. works ....100 lbs.	17.20	–
Sodium molybdate, anhyd., dms. f.o.b. works, 100 lbs and over ..lb.	4.87	–
cryst., dms., t.l., same basis ....lb.	4.12	–
Sodium naphthionate, dms., c.l., t.l., f.o.b. works ....lb.	2.00	–
Sodium Nitrate, USP, bgs., c.l., f.o.b., frt. equald ....100 lbs.	34.50	–
Sodium nitrate, dom., industrial, bgs., c.l., works ....ton	284.00	292.00
bulk, c.l., works ....ton	260.00	–
imp., coml., 100-lb. bgs., c.l., Atl., or Gulf whse. ....ton	205.00	214.00
bulk, c.l., same basis ....ton	182.00	–
imp., agricultural, bulk, c.l., same basis ....ton	140.00	–
Sodium nitrite, USP, dms., c.l., works, frt. equald ....100 lbs.	37.25	–
Sodium orthosilicate, tech., anhyd., bgs., c.l., works ....100 lbs.	34.50	–
Sodium orthosilicate, tech., hydrated, flake, dms., c.l., works. 100 lbs.	27.45	–
bgs., c.l., works ....100 lbs.	26.25	–
Sodium oxalate, 99%, bgs., t.l., works. lb.	.45	–
Sodium pentachlorophenate, beads c.l., 30,000-lb min. ....lb.	.67	–
bgs. ....lb.	.66	–
Sodium pentobarbital (see Pentobarbital-sodium).		
Sodium perborate, tetrahydrate, tech., bgs., c.l., f.l., works ....lb.	.32½	.36½
Sodium persulfate, 225-lb. dms., 24,000 lbs. or more, f.o.b. plant ....lb.	.63½	–
55-lb. bgs. same basis ....lb.	.62	–
Sodium phenobarbital (see Phenobarbital-Sodium).		
Sodium phenosulfonate, powd., dms., lb.	.76	–
Sodium phosphate, anhyd., dibasic tech., bgs., c.l., t.l., works, frt. equald ....100 lbs.	54.50	–
food grade, same basis. 100 lbs.	57.50	–
Sodium phosphate, monobasic, tech., same basis ....100 lbs.	55.75	–
food grade, same basis. 100 lbs.	59.75	–
tribasic, tech., same basis. 100 lbs.	52.25	52.75
food grade, same basis. 100 lbs.	63.25	–
chlorinated, same basis. 100 lbs.	31.50	–
cryst., tech., same basis. 100 lbs.	30.50	–
cryst., food grade, same basis ....100 lbs.	35.50	–
USP, dried, powd., bgs., dms., works ....lb.	.16	.20½
Sodium picramate, tech., paste. 200-lb. dms., dry basis, divd. ..lb.	5.50	–
Sodium propionate, dms., 2,000 lbs. or more, f.o.b. frt. alld ....lb.	.54	–
Sodium pyrophosphate, acid, tech., bgs., c.l., works, frt. equald. ..100 lbs.	58.25	–
food grade, non-leavening, bgs., c.l., works, frt. equald. ..100 lbs.	61.25	–
Sodium pyrophosphate, ferric, dms., c.l., t.l., works ....lb.	.3660	–
Sodium pyrophosphate, tetrabasic, anhyd., tech., bgs., c.l., t.l., works, frt. equald. ..100 lbs.	44.75	–
bulk, hopper cars, same basis ....100 lbs.	42.50	–
food grade, bgs., c.l., t.l., same basis ....100 lbs.	53.00	–
Sodium salicylate, USP, cryst., 200-lb. dms., 1,000-lb. lots or more, works, frt. equald ....lb.	3.00	–
USP, powd., 200-lb. dms., 1,000-lb. lots or more, same basis ..lb.	3.05	–
Sodium sesquicarbonate, bulk, c.l., t.l., works ....ton.	170.00	–
bgs, c.l., t.l. works ...100 lbs.	198.00	–
Sodium silicate, solid, or glass, 3.22-3.25 ratio, bulk, c.l., t.l., works ....100 lbs.	15.70	–
bgs., c.l., t.l., works ...100 lbs.	27.75	–
1.85-2.00 ratio, bulk, c.l., t.l., works ....100 lbs.	20.30	–
bgs., c.l., t.l., works ....100 lbs.	22.15	–
soln., 37.6° solid, 3.22-3.25 ratio, bulk, c.l., t.l., frt. equald ....100 lb.	5.30	–
"Ratio" indicates percentage by weight of SiO_2 divided by percentage by weight of Na_2O.		
Sodium silicofluoride, bgs., c.l., t.l., works, frt. equald ...100 lbs.	17.65	18.75
Sodium stannate, dms. wks. frt alld. E. lb.	N.A.	–
Sodium sulfanilate, dms, works ....lb.	.22	–
Sodium sulfate, NF XII, powd., dms., 2,000-lb. lots ....lb.	.23½	–
tech., detergent, rayon-grade, c.l., works. Gulf ....ton	60.00	86.00
Sodium sulfate, West, bulk, c.l., works, frt. equald ....ton	60.00	101.00
bulk, c.l., East, same basis ...ton	113.00	114.00
Sodium sulfate, photo grade, 100-lb. bgs., c.l., works ....ton	47.00	53.00
Sodium sulfhydrate, flake, 70-72%, dms., c.l., works, frt. equald ....ton	500.00	–
liq., 44-46%, tanks, works, frt. equald ....ton	500.00	–
Sodium sulfide, flake, dms., c.l., works, E., frt. equald ....ton	470.00	–
bgs., same basis ....ton	410.00	–
Sodium sulfide, fused, dms., c.l., works, E., frt. equald. ...ton	240.00	–
Sodium sulfite, anhyd., tech. 95-100% bgs, f.o.b. works ...100 lbs.	23.76	–
Sodium sulfocyanide CP (see Sodium thiocyanate).		
Sodium tetraborate (see Borax).		
Sodium tetrasulfide, liq. 34%, dms., c.l., works, frt. equald. ..ton	540.00	–
Sodium thiocyanate, purif., cryst., 250-lb. dms., 5 dms. or more f.o.b. works ....lb.	3.26	–
tech., anhyd. dms., 2,000 lbs. or more, works ....lb.	.97	–
Sodium thiosulfate, tech., photo-grade, anhyd., 100-lb. bgs., c.l., t.l., works, frt. equald ....100 lbs.	45.50	–
cryst. pentahydrate, c.l., t.l., same basis ....100 lbs.	26.50	–
Sodium titanate, dms., c.l., works. .lb.	.14¼	–
Sodium trichloroacetate, 95%, 50-lb. bgs., c.l., frt. alld, E. ....lb.	.29	–
Sodium tripolyphosphate, tech., bgs., c.l., t.l., works, frt. equald. ..100 lbs.	38.75	–
bulk, hopper cars, same basis. 100 lbs.	37.50	–
food grade, bgs., c.l., t.l., same basis ....100 lbs.	48.50	–
Sodium tungstate, tech. high moly., dms., 10,800 lbs. or more, frt. alld. ....lb.	5.00	5.50
Folin grade dms., 10,800 lbs. or more, same basis ....lb.	6.00	–
Sodium-ammonium phosphate, purif., cryst., dms., works ....lb.	.52	–
Sodium-formaldehyde sulfoxylate, dms., t.l., f.o.b. works ....lb.	.91	–
Sodium-zirconyl sulfate, dms., 1,000-lb. lots or more, works ....lb.	.28	–
tech., dms., any quantity, works ..lb.	.19	–
Solvent naphtha, petroleum, straight aromatic, b.r. 320°-350°F, 58°F m.a.p., tanks:		
New Jersey ....gal.	1.52	–
Houston ....gal.	1.41	–
Illinois ....gal.	1.54	–
Solvent naphtha, petroleum, straight aromatic, b.r. 360°F-410°F, 60°F m.a.p., tanks:		
New Jersey ....gal.	1.00	1.35
Houston ....gal.	1.30	–
Illinois ....gal	1.30	1.35
Sorbic acid, t.l. dms., divd. ....lb.	2.20	3.10

CHEMICAL PRICES

WEEK ENDING OCT 31, 1986

Sorbitan monostearate, dms., c.l., t.l., 60,000 lb. min., f.o.b. works ....lb.	.76	–
Sorbitan tristearate, c.l., t.l., 30,000 lb. min., f.o.b. works ....lb.	.60	–
Sorbitol, USP, reg. 70% aqueous, dms., c.l., f.o.b. shipping point ....lb.	.35	–
tanks, f.o.b. shipping point ..lb.	.30	–
gran., dms., c.l. t.l., works ....lb.	.70	.74
powd., dms., c.l., t.l., works ....lb.	.68	.72
Soybean meal (See Oils, Fats & Waxes market report.)		
Soybean oil (See Oils, Fats & Waxes market report.)		
Soybean oil acidulated, soapstock, 95% acid, tanks, New York lb.	.14	.15
Soybean oil, acid, dbl., dist., dms. ..lb.	.46	.59
tanks ....lb.	.43	.44
s.d., dms ....lb.	.47	.59
tanks ....lb.	.38	.43
Spearmint leaves, imp., bls. ....lb.	2.50	2.70
Spearmint oil, Far West, native ....lb.	14.00	15.00
Midwest, native ....lb.	10.00	12.00
Far West, Scotch ....lb.	15.00	15.50
Midwest, Scotch ....lb.	14.60	15.25
Spruce oil, dms. ....lb.	6.00	–
St. John's bread, edible, bls. ....lb.	.26	.30
Stannic chloride, anhyd., dms., works ....lb.	N.A.	–
Stannic oxide, dms., works ....lb.	N.A.	–
Stannous chloride, anhyd., dms. wks. lb.	N.A.	–
Stannous fluoborate, liq., conc., dms., t.l., works, frt. equald ....lb.	2.50	–
Stannous oxide, dms., works ....lb.	N.A.	–
Stannous sulfate, dms., works ....lb.	N.A.	–
Stearic acid, double pressed, bulk ..lb.	.26	.39
single-pressed, bulk ....lb.	.26	.375
triple-pressed, bulk ....lb.	.32	.40
Stramonium leaves, bgs. ....lb.	.15	.20
Streptomycin sulfate, USP, bulk. .kilo.	47.00	–
Strontium carbonate, glass grd., bgs., t.l., works ....lb.	.37¼	–
Strontium nitrate, 50-15 bgs., c.l., works ....100 lbs.	51.50	–
Styrene monomer, 99.6% min., t.c., t.t., f.o.b. works ....lb.	.22	.27
Styrene-acrylonitrile resin, nat., bulk, f.o.b. plant ....lb.	.77	–
cryst., bulk, same basis ....lb.	.77	.81
clear, same basis ....lb.	.77	.81
Styrol acetate, dms. ....lb.	2.35	–
Succinic acid, purif., cryst., dms., t.l., frt. alld ....lb.	2.00	2.10
Succinic anhydride, dms., c.l., t.l., f.o.b. work ....lb.	1.71	–
Sucrose, refd., white, bgs., c.l., f.o.b. refy. E. ....100 lbs.	33.10	–
Sucrose acetate, isobutyrate, 90% dms., t.l., divd ....lb.	1.18	–
tanks, divd. ....lb.	1.10	–
100%, dms., t.l., divd. ....lb.	1.18	–
Sucrose octa-acetate, denaturing grade, 100-lb. dms., f.o.b. works ....kilo	12.50	13.50
Sulfabenzamide, dms., 500 kilos. .kilo.	39.50	–
Sulfabenzamide-sodium, dms., 500 kilos ....kilo.	25.00	–
Sulfacetamide, USP, dms., 500 kilos ....kilo.	20.00	23.50
Sulfadiazine, USP, powd. dms., 500 kilos ....kilo.	53.00	–
Sulfadiazine-sodium, USP, dms., 500 kilos ....kilo.	40.70	–
Sulfamerazine, USP, microcrystals, dms., 500 kilos ....kilo.	33.50	–
USP, powd., dms., 500 kilos ...kilo.	32.00	–
Sulfamethazine-sodium, USP, powd. dms., 50 kilos ....kilo.	13.00	–
Sulfamethazine, powder, dms., 500 kilos ....kilo.	9.00	10.00
Sulfamic acid, cryst., bgs., c.l., t.l., works ....100 lbs.	38.00	41.00
Sulfamic acid, gran., dms., c.l., t.l., works ....lb.	.36	–
Sulfanilamide, NF, reg. 1,000-lb. dms., frt. equald ....lb.	2.00	–
Sulfanilic acid, tech., bgs., t.l., f.o.b. works ....lb.	.67½	–
Sulfaquinoxaline, veterinary, grade, dms. ....lb.	8.00	–
Sulfur, crude, bright, molten, dom., f.o.b. vessels, Gulfports ...long-ton	150.00	–
f.o.b. La. refy ....long-ton	125.50	–
recovered, divd., Houston. long-ton	125.50	–
ex terminal, Rotterdam ...long ton	135.00	–
f.o.b. tanks, Alberta, Canada, for US delivery ....long-ton	102.00	–
dark, ex-Tampa, Fla. ....long-ton	157.50	–
Sulfur, crude, 99.5% min. purity, coml. flour, 50-lb. bgs., c.l., mines basis ....100 lbs.	13.60	–
lump, same basis ....100 lbs.	13.80	–
Sulfur, refd., 99.5% min. purity, rolls 50-lb. bags, c.l., mines basis ....100 lbs.	17.50	–
flour, light, 50-lb. bgs., same basis ....100 lbs.	20.00	–
Sulfur, refd., sublimed, NF, 99.85% min. purity, 50-lb. bgs., c.l., mines basis ....100 lbs.	26.00	–
Sulfur, rubbermakers, 99.5% min. purity, coml., reg., 50-lb. bgs., c.l., mines basis ....100 lbs.	14.60	–
fine, 98% min. passing through 325 mesh, same basis ..100 lbs.	16.60	–
Sulfur dichloride, dms., c.l., works, frt. equald ....lb.	.24	–
tanks, same basis ....lb.	.17¾	–
Sulfur dioxide, liq., bulk, t.c., t.l., f.o.b. works ....ton	280.00	–
Sulfur monochloride, dms., c.l., works, frt. equald ....lb.	.22½	–
tanks, same basis ....lb.	.18¼	–

CHEMICAL PRICES

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Sulfuric acid, virgin 100% tanks, works,			
East Coast	ton	71.75	95.90
Gulf Coast	ton	75.00	86.40
Midwest	ton	80.25	-
Southeast	ton	66.15	-
West Coast	ton	65.00	-

NOTE: For prices on 60 and 66 Be., multiply by .7767 and .9319, respectively. For price of 20% fuming oleum, as is, add $3-$4 to above prices and multiply by 1.045.

Sulfuric acid, smelter, 100% tanks, works,			
Gulf Coast	ton	46.00	52.00
New Mexico	ton	20.00	25.00
Southeast	ton	63.16	-
93%, tanks, divd., Northwest	ton	60.00	65.00
Sunflowerseed oil, crude, f.o.b. Minneapolis	lb.	.16	.16½
Superphosphate, triple, 46% or more, a.p.s., run-of-pile, bulk, c.l., Fla	unit-ton	2.75	3.05
bulk, gran., c.l., Fla.	ton	160.00	165.00

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Talc, dom., grd New York bgs., c.l., works	ton	64.00	-
99.5%, 325 mesh, bgs., c.l., works	ton	84.00	90.00
Talc, dom., 99.5%, 400 mesh, micronized, bgs., c.l., works	ton	167.00	236.00
625 mesh, micronized, bgs., c.l., works	ton	200.00	-
dom., ord., Calif. grd., bgs., c.l., works	ton	90.00	-
ord., Vermont, off-color grd., bgs., c.l., works	ton	136.00	-
imp., Canadian, grd., bgs., c.l., works	ton	70.00	64.00
Tall oil, crude, Southeast, tanks, works, frt. equald	ton	90.00	100.00
Tall oil, refd., acid, same basis	lb	.31	-
dist., tanks, same basis	lb	.19	.23
Tall oil acids, 2% or more rosin, tanks, works, frt. equald	lb	.20½	.23½
less than 2% rosin acid	lb	.22	.27
Tallow (see Oils, Fats & Waxes market report.)			
Tallow, fatty acids, tech., non-ret dms., c.l., divd	lb	.37	.40
tanks, divd	lb	.29	.45
hydrogenated, tech., flake, bgs., c.l., divd	lb.	.37	.33
tanks, divd	lb.	.35	.42
Tangerine oil Fla., dms f.o.b.	lb.	6.50	9.50
Italian, dms	kilo	52.90	-
Tankage, animal feeding, 9-11%, NH_3, New York, bulk	unit-ton	5.50	-
Tankage, fert. grade (see Nitrogenous process tankage).			
Tannic acid, NF, fluffy, bbls., 1,000-lb. lots	lb.	6.09	-
tech., powd., dms.	lb.	4.62	-
Tar acid oil, 15-16% t.l., dms., f.o.b works	gal.	1.40	-
25-26%, t.l., dms., f.o.b. works	gal.	1.59	-
50-53%, t.l., dms., f.o.b. works	gal.	1.67	-
Tartaric acid, NF, bgs.	lb.	1.20	1.50
Tellurium, metallurgical, f.o.b works	lb.	12.00	-
Terpin hydrate, NF, imp., cryst., powd., 38 kilo drums, f.o.b. ship. pt., frt. equald	lb.	1.35	-
Terpineol	lb.	1.10	1.50
Terpinyl acetate, extra, dms	lb.	2.40	-
prime, dms	lb.	1.35	2.05
Terpinyl propionate, dms	lb.	4.50	-
Tetrachloroethylene, tech. (see Perchloroethylene).			
Tetrachloroethylene, USP, dms., c.l., t.l., works	lb.	.30¼	-
Tetraethyl orthosilicate, bulk, f.o.b. works	lb.	1.53	1.66
Tetraethylene glycol, tanks, frt. alld.	lb.	.67	-
Tetraethylene glycol diacrylate, t.l. dms., f.o.b. works	lb.	1.50	-
Tetraethylenepentamine, tanks, same basis	lb.	1.70	1.75
Tetraethylthiuram disulfide, tech., flake, dms., t.l., frt. alld.	lb.	.68	2.07
Tetrahydrofuran dms., c.l., t.l., f.o.b. works	lb.	1.02	-
tanks, same basis	lb.	.86	-
Tetrahydrofurfuryl alcohol tanks, f.o.b. Memphis, Tenn	lb.	.90	-
Tetrahydrolinalool, syn., dms	lb.	7.20	-
Tetrahydrophthalic anhydride dms., c.l., t.l. f.o.b. works	lb.	.65	-
Tetrapotassium phosphate (see Potassium phosphate, tetrabasic).			
Tetrasodium pyrophosphate (see Sodium pyrophosphate, tetrabasic)			
Thallium metal, divd	lb.	35.00	-
Thallium sulfate, 99%, bots., divd.	kilo	140.00	-
Theobromine, bulk f.o.b. works	lb.	4.00	4.50
Theophylline, USP, anhyd. 50-kilo dms., 10,000-kilo lots	kilo	12.00	12.95
Thiamine hydrochloride, USP 100-kilo dms., divd	kilo.	27.00	31.00
Thiamine mononitrate, USP, 100-kilo dms., divd	kilo.	27.00	31.00
Thiodiphenol, 98%, dms., f.o.b. works	lb	3.35	-
Thioflavin green toners, molybdated, PMA, dms	lb.	5.40	6.05
tungstated, PTA, dms	lb.	6.60	5.66
Thioglycolic acid, refd., dms., ton lots 100% acid basis	lb.	2.07	-
Thioindigold maroon, dms., frt. alld.	lb	7.50	-
reds, dms., frt. alld.	lb.	5.88	6.12
Thionyl chloride, high-purity, 99.6%, 24,000-lb. min., t.l., dms. frt. equald	lb.	.55	-
Thorium nitrate, purif., dms., 100-lb. lots or more, works	lb.	2.75	-
dl-Threonine, dms 10 kilos wks	kilo.	128.00	-
Thyme leaves, French, bgs.	lb.	1.45	-
Spanish, bgs.	lb.	.75	-
Thyme oil, NF, red, dms	kilo	20.00	-
NF, white, dms.	kilo	22.00	-
Thymol, NF	lb.	3.75	6.15
Thymol iodide, dms., 100-lbs f.o.b. works	lb.	52.30	56.20
Tin metal (NY composite)	lb.	N.A.	-
Titanium dioxide, anatase, bgs., 20-ton lots, frt. alld	lb.	.77	.79
slurry shipments, 50-ton lots, dry basis, frt. alld	lb.	.76	-
Titanium dioxide, rutile, reg., bgs., 20-ton lots, frt. alld	lb.	.61	.84
slurry shipments, 50 ton lots, dry basis, frt. alld	lb.	.64	-
Non-chalking rutile material costs 1c. per pound more.			
Titanium hydride powd. electronics grade, dms.	lb.	26.50	-
Titanium tetrachloride, tech., bulk, c.l., f.o.b. works	lb.	.30	.35
200-gal cylinders c.l., same basis	lb.	.50	-
Titanium sponge, 99.3%, fiber drums, less than 5,000 lbs. f.o.b. wks.	lb.	4.85	-
Tobias acid, 2,000 lbs. or more	lb.	2.45	-
d-a-Tocopherols, 67%, dms.	kilo	50.08	-
d-a-Tocopheryl acetate, 61% conc., dms.	kilo	67.49	-
d-a-Tocopheryl acid succinate, cryst., dms.	kilo	76.44	-
dl-a-Tocopherol, dms.	kilo.	27.40	-
dl-a-Tocopheryl acetate, USP 50-kilo dm. 1000 kilo min.	kilo.	16.00	16.50
50% dry powd., 50-kilo dm.	kilo	17.00	-
Tolu balsam, cns.	lb.	7.60	8.68
Toluene, petroleum, ind. or nitration, tanks			
Atlanta, Ga., divd.	gal.	.70	-
Bayonne, N.J., divd.	gal.	.70	-
Baytown, Tex., f.o.b.	gal.	.70	-
Chicago, Ill. divd.	gal.	.70	-
Clairton, Pa., f.o.b.	gal.	.70	-
Deer Park, Tex., f.o.b.	gal.	.70	-
Ft. Wayne, Ind., divd	gal.	.70	-
Gulf Coast, spot, barges	gal.	.65	.67
Houston, Tex., divd.	gal.	.70	-
New Jersey Metro, divd	gal.	.70	-
Philadelphia, Pa., divd.	gal.	.70	-
Providence, R.I., divd.	gal.	.70	-
Toluene di-isocyanate (mixed isomers), 80% 2,4- and 20% 2,6-isomers, jumbo tankcars, divd	lb.	1.01	-
p-Toluenesulfonamide, powd., dms., t.l., works	lb.	3.55	-
m-Toluidine, tech., bulk	lb.	3.10	-
o-Toluidine, tech., liq., dms. c.l.	lb.	.72	.75
bulk, same basis	lb.	.80	.84
p-Toluidine, tech. cast solid, dms., cl., works	lb.	1.80	1.85
Liq., tanks, same basis.	lb.	1.70	-
flake, same basis	lb.	1.95	-
Toluidines, mixed, o-m-p, tech., liquid, c.l. f.o.b. works	lb.	1.03	-
bulk same basis	lb.	.95	-
Tolyltriazole, dms., 1,000-lb. lots, f.o.b. Cincinnati, Ohio	lb.	2.80	-
Tonka beans, Angostura, prime, 1,000-lb. lots	lb.	6.50	-
Toxaphene, dms., c.l., t.l., works	lb.	.38	-
Tragacanth gum, No. 1, ribbons, cns.	lb.	38.00	40.00
flaked powder	lb.	12.50	15.00
Triacetin tanks, divd. E	lb.	.75	-
Tributyl citrate, t.l., drums, f.o.b., works	lb.	1.70	-
Tributyl phosphate, tanks, works	lb.	1.65	1.77
Tributylamine, dms., c.l., divd.	lb.	1.39	-
tanks, same basis	lb.	1.33	-
Trichloroacetic acid, tech., 300-lb. dms., c.l., f.o.b., works	lb.	.94	-
USP, 100-lb. dms., frt. equald.	lb.	.99½	-
1,2,4-Trichlorobenzene, pure, tanks, divd.	lb.	.61½	-
1,1,1-Trichloroethane, tanks, consumers, divd.	lb.	.40½	-
1,1,2-Trichloroethane, tanks, f.o.b. works	lb.	.42	-
Trichloroethylene, tanks, divd.	lb.	.38½	-
Trichloroisocyanuric acid, dms.	lb.	1.25	-
Trichlorophenoxyacetic acid (see 2,4,5-T).			
Tricholine citrate, 65%, soln., non-ret. dms., 1,500-lb. lots, divd.	lb.	1.35	-
Tricresyl phosphate, tanks, f.o.b. works	lb.	1.60	1.76
Tridecyl alcohol, mixed isomers, tanks, divd.	lb.	.57	-
Triethanolamine, 85%, tanks, divd. E.	lb.	.45	.46
99%, tanks, same basis	lb.	.45	.48
Triethanolamine lauryl sulfate, tanks, f.o.b. works	lb.	.27¼	.27½
Triethylamine, dms., c.l., divd.	lb.	1.33	-
tanks, same basis	lb.	1.20	-
Triethyl citrate, t.l., drums, f.o.b., works	lb.	1.82	-
Triethyl phosphate, tanks, divd.	lb.	1.16	-
Triethylene glycol, tanks, f.o.b. Cult	lb.	.47	-
Triethylene glycol dipelargonate, tanks f.o.b. works	lb.	.29½	-
40-60% tanks, 100% basis, frt. equald.	lb.	.35	-
Triethylenetetramine tanks, frt. equald.	lb.	1.43	1.45
Tri-iso-tolyl trimellitate, f.o.b. works	lb.	.61	.55
Tri-isobutylene, tanks, divd.	lb.	.45	-
Tri-isopropanolamine, dms., c.l., frt. alld. E.	lb.	.57½	-
Trimethylamine, anhyd., tanks, frt. equald., 100%	lb.	.54½	-
25% soln., tanks, frt. equald., 100% basis	lb.	.63½	-
40% soln., tanks, frt. equald., 100% basis	lb.	.58½	.67
Trimethylolpropane bgs c.l. t.l. divd.	lb.	.73	-
Trimethylolpropane triacrylate, t.l. dms., f.o.b. works	lb.	1.50	-
Tripentaerythritol, tanks, frt. alld., E.	lb.	1.00	-
Triphenyl phosphate, dms., t.l., frt. equald.	lb.	1.64	.78
Tripropylene glycol tanks, frt. alld. E.	lb.	.84	-
Tris-(hydroxymethyl) nitromethane, solid, t.l. works	lb.	.805	-
Trisodium phosphate (see Sodium phosphate, tribasic)			
l-Tryptophan, dms, 25-kilo lots	kilo	62.00	65.00
Tung oil, tanks, imp. New York	lb.	.31	.33
Tungstic acid 92½%, dms., 1,750-6,000 lbs., works	lb.	12.85	-
Turmeric, Alleppey 5%	lb.	.66	-
Turmeric, Alleppey over 6%	lb.	.70	-
Turpentine, crude sulfate tanks, f.o.b Southeast works	gal.	.70	.80

U

Ultramarine blue pigments, 550-2,000 lb-lots, works	lb.	1.30	-
violet, same basis	lb.	2.20	-
Umber pigment, burnt, American, frt equald	lb.	.13½	.15½
raw, American, dom., bgs., l.c.l., same basis	lb.	.13½	.14¾
Undecylenic acid, dms., works	lb.	2.70	-
Urea, 46% N, ind., bulk, 50-ton c.l., divd	ton	200.00	220.00
46% N, agricultural, bulk, divd. Midwest	ton	200.00	215.00
46% N, agricultural, bulk, divd. West	ton	210.00	-
Uva-Ursi leaves, bls.	lb	.22	-

V

Valerian root, Belgian, bgs.	lb.	.65	.65
Indian, bgs.	lb.	.45	-
Vanadium oxytrichloride, 3,000 lb. cyls., works	lb.	5.40	-
Vanadium pentoxide, tech., gran., per lb of V_2O_5, 550-lb. dms., works	lb.	4.10	4.94
fused or flake, per lb V_2O_5, 550-lb dms., works	lb.	3.35	3.65
Vandyke brown, bags., t.l., frt. equald.	lb.	.27¼	-
Vanilla beans, Madagascar	lb.	37.00	-
Java, tins	lb.	27.00	30.00
Vanillin, USP, dms., f.o.b works	lb.	8.25	-
imp., dms.	lb.	4.75	5.00
Veratrol Ag	lb	.64	-
Vetivaryl acetate, dms.	kilo	60.50	-
extra	lb.	63.00	-
Vetiver oil, Bourbon, dms.	lb.	49.00	-
Chinese	lb.	18.00	-
Haitian	lb.	26.50	-
Java	kilo	34.00	-
Victoria blue toners, molybdated, PMA dms.	lb.	6.20	6.30
tungstated, PTA, dms.	lb.	10.40	-
Vinyl acetate monomer, tanks, divd.	lb	.39	-
Vinyl chloride monomer, polymer grade, tanks, f.o.b. works	lb	.26	-
Vinyl ether, USP, anesthesia, 75-cc. bots., hospitals	bots.	1.56	-
2-Vinylpyridine t.l., dms. works	kilo.	7.81	-
tanks, works	kilo.	7.61	-
Vinyltoluene, bulk, f.o.b.	lb.	.67	.73½
Vitamin A, synthetic, dry, pharm., 500,000 A units per gm., 50-kilo lots	kilo	33.00	-
Vitamin A, liq. in oil, pharm., 1,000,000 A units per gram, 10 kilo lots	kilo	41.00	-
Vitamin A, feed grade, 650,000 units per gm	kilo.	18.70	23.85
Vitamin B_1 (see Thiamine hydrochloride).			
Vitamin B_2 (see Riboflavin and Yeast).			
Vitamin B_{12}, cryst., non-sterile, USP (cyanocobalamin), vials, 50-gram, lots	gram	8.00	9.75
Vitamin B_{12} 1% trituration of cryst. B_{12} (cyanocobalamin USP) with dicalcium phosphate, 25-kilo dms.	kilo.	10.75	12.75
Vitamin B_{12}, 0.1% trituration of cryst. B_{12} (cyanocobalamin USP) with mannitol, 25-kilo dms.	kilo.	15.60	-
Vitamin B_{12}, cobalamin concentrate NF with mannitol, 1,000 mcg, per gram, dms.	per gram activity	19.45	-
Vitamin B_{12}, 1% Vitamin B_{12}, USP, absorbed on resin, 5-kilo dms., 500-gram lots, frt. alld.	per gram activity	15.65	-
Vitamin B_{12}, 1% cobalamin concentrate, NF, absorbed on resin, 5-kilo dms., frt. alld	per gram activity	15.40	-
Vitamin B_{12}, 1% cyanocobalamin in gelatin, 2.5-kilo dms., frt. alld.	per gram activity	15.40	-
Vitamin C (see Ascorbic acid).			
Vitamin D (see Cholecalciferol)			
Vitamin D_2 (see Codliver and Fishliver oils).			
Vitamin E (see a-Tocopherol and Wheat germ oil).			
Vitamin H (see Biotin).			
Violet methyl toner (see Methyl violet toner)			

W

Warfarin 0.5%, dms., ton lots, frt. alld. New York or Chicago	lb.	.75	-
Wheat germ oil, cold-pressed	gal.	16.50	17.60
cold-processed	gal.	14.00	-
White precipitate, USP, powd., 100-lb. dms., f.o.b. works	lb.	7.892	11.24
Whiting (see Calcium carbonate).			
Wintergreen oil, syn. (see Methyl salicylate).			
Witch hazel bark, bls.	lb.	1.35	-
leaves, bls.	lb.	1.75	-
400 mesh, bgs., c.l. works	ton	134.00	-
325 mesh, bgs., c.l. works	ton	117.00	-
high aspect ratio, bgs., works	ton	164.00	-
Wollastonite, t.l., f.o.b., producing plant, general grade	ton	200.00	-
325 mesh	ton	140.00	141.00
400 mesh	ton	160.00	-
1250 mesh	ton	500.00	-
Wool grease, USP (see Lanolin).			
Wormseed oil (see Chenopodium oil, NF)			
Wormwood oil, cns.	lb.	31.00	-

X

Xanthan gum, food 300-lb. dms., f.o.b. works	lb.	5.65	6.20
ind., grade, same basis	lb.	4.64	-
Xylene, petroleum, ind. or nitration, tanks			
Alliance, La., f.o.b.	gal	.80	-
Atlanta, Ga., divd	gal	.80	-
Bayonne, N.J., divd	gal.	.80	-
Bayonne, N.J. f.o.b.	gal.	.80	-
Baytown, Tex., f.o.b	gal	.80	-
Chicago, Ill., divd	gal	.80	-
Clairton, Pa	gal.	.80	-
Ft. Wayne, Ind., divd.	gal	.80	-
Gulf Coast, spot, barges	gal.	.80	-
Houston, Tex., divd.	gal.	.78	.80
New Jersey Metro, divd	gal.	.80	-
Xylene, petroleum, ind. or nitration, tanks			
Philadelphia, Pa., divd.	gal.	1.38	-
Providence, R.I., divd.	gal.	1.42	-
South Bend, Ind., divd	gal.	1.37	-
m-Xylene, high purity, tanks, f.o.b Texas City, Tex	lb.	.38	-
o-Xylene, tanks, works	lb.	.125	.16
p-Xylene, tanks, divd.	lb	.185	-
m-Xylenediamine, dms., t.l., f.o.b. works	lb.	1.70	-
2,4-Xylidine, tech., liq., c.l., t.l. f.o.b. works	lb.	1.50	-
Xylidines, mixed, o-m-p., dms., c.l., t.l., f.o.b. works	lb.	1.00	-

Y

Yara yara, 25-lb. cns.	lb.	2.81	-
Yeast, pure brewer's debittered, NF, Saccharomyces, t.l., f.o.b. works	lb.	1.10	-
Yerba santa leaves, bls.	lb.	2.40	-
extra, bols.	lb.	26.50	31.5
Ylang-ylang oil, extra grade	lb.	36.50	-
grade 1	lb.	25.00	-
grade 2	lb.	25.00	-
grade 3	lb.	22.00	-

Z

Zein, bgs., 2,000-lb. lots	lb.	7.50	[illegible]
Zinc acetate, NF, dms.	lb	1.00	[illegible]
tech., dihydrate, bgs., t.l., works.	lb.	1.60	-
Zinc borate, tech., 43% ZnO, 37% B_2O_3, 50-lb bgs., 20,000-lb. t.l. f.o.b. works	lb.	.55	-
cryst., 37% ZnO, 49% B_2O_3, 250-lb. dms 20,000 lbs t.l. f.o.b. wks	lb	.89	-
Zinc chloride, USP, gran., dms.	kilo	9.79	-
Zinc chloride, tech., soln. 50%, tanks, f.o.b. Cleveland, Ohio	100 lbs.	20.20	-
Concord, N.C	100 lbs.	20.20	-
Freeport, Tex.	100 lbs.	20.20	-
Old Bridge, N.J	100 lbs	20.20	-
65 degree, same basis Cleveland, Ohio	100 lbs.	27.90	-
Concord, N.C	100 lbs.	27.90	-
Old Bridge, N.J	100 lbs.	27.90	-
70 degree, same basis Cleveland, Ohio	100 lbs	29.70	-
Concord, NC	100 lbs.	29.70	-
Old Bridge, NJ	100 lbs.	29.70	-
72 degree, same basis Cleveland, Ohio	100 lbs.	33.20	-
Concord, NC	100 lbs.	33.20	-
Old Bridge, NJ	100 lbs.	33.20	-
Zinc chromate, bgs., divd	lb.	1.12	-
Zinc cyanide, dms., c.l	lb.	1.65	-
Zinc dust pigment type 1 & 2, dms., c.l., f.o.b. plant	lb.	.59	-
Zinc ethylenediamine tetracetic acid, 6.4% Zn, ammonia salt soln., t.c., t.t., f.o.b. works	lb.	.56	-
9% Zn., ammonia salt soln., t.c., t.l., f.o.b. works	lb.	.48	-
Zinc fluoborate, liq. conc., dms., t.l., works, frt. equald.	lb.	.66	-
Zinc metal, high grade, divd	lb.	.50	-
Zinc naphthenate, liq. 8% Zn, dms., divd	lb.	.95	-
Zinc nitrate, tech., flake 300-lb. dms.	lb.	.34	-
Zinc oxide photo conductive, bgs., c.l., frt. alld.	lb.	.47¾	-
Zinc oxide, USP 50-lb. bxs., c.l., frt. alld.	lb.	.46½	-
Zinc oxide pigment, American process, lead-free bgs., c.l., frt. alld.	lb.	.40	-
Zinc oxide pigment, French process regular, bgs., c.l., frt. alld.	lb.	.41	-
Zinc phenolsulfonate, purif., gran., 250-lb. dms., t.l., frt. alld.	lb.	1.82	-
Zinc pyridinethione, 48% dispersion, dms., f.o.b. works	lb.	8.50	-
Industrial grade	lb.	14.50	-
Zinc resinate precip. 7.2-7.6% Zn, dms., frt. alld.	lb.	.45	-
Zinc silicofluoride, dms., c.l., t.l., works	lb.	.17	-
Zinc stearate, USP, bulk, t.l.	lb.	.92	-
Zinc sulfate, gran., monohydrate, industrial grade 36% Zn., bgs., c.l., works	100 lbs.	26.80	-
agricultural grade powd., bulk, same basis	100 lbs.	22.50	-
Zinc yellow (see Zinc chromate).			
Zinc-ammonium chloride, bgs., c.l., works	lb.	.42	-
Zinc undecylenate, dms., works	lb.	4.87	-
Zinc-formaldehyde sulfoxylate, basic 200-lb. dms., t.l., frt. alld.	lb.	1.05	-
Zircon gran. bgs., bulk c.l., works	ton	165.00	-
Zircon milled bgs., 200 and 325 mesh, c.l., works	ton	225.00	-
Zirconium acetate soln., 25% ZrO_2, dms., c.l., 30,000 lbs. min., works	lb.	.97	-
22% ZrO_2, same basis	lb.	.78	-
Zirconium hydride, powd., electronic grade, dms., works	lb.	[illegible]	-
Zirconium oxide, powd., cont., dms., 2,000 lbs. min.	lb.	4.25	-
electronic, same basis	lb.	7.25	-
insulating, stabilized, 326°F same basis	lb.	3.31	-
insulating, unstabilized, 325°F same basis	lb.	3.68	-
dense, stabilized, 30F, same basis	lb.	2.82	-
Zirconium oxychloride, liq., cns. 5-ton lots, works	lb.	.91	-

CHEMICAL IMPORTS

US imports of chemicals and related materials are reported in this section by CPI material. Listings include consignee where possible, container, net weight, name of vessel (in parenthesis), port of origin and date of shipment's arrival in New York or the Port of Newark.

US chemical imports/exports are tabulated monthly in the market reports.

A-B

5 AMINO 2 METHYLPHENOL TTRG 9 dms (1217 lbs) (Rouen) Rotterdam, 9/16

ACETAMINOPHEN Sterling Organics 243 dms (42586 lbs) (Atlantic Concert) Liverpool, 10/6.

ACETAMINOPHEN POWDER Roussel Pharmaceutical Produ 165 dms (38140 lbs) (Strathconon) Rotterdam, 9/25.

ACETATE LINALYLE SYNTHETIC 160 dms (68076 lbs) (Atlantic Saga) LeHavre, 9/30.

ACETONITRILE Cruachem 1 ctn (44t lbs) (Atlantic Concert) Liverpool, 10/6.

ACETYL CHLORIDE Pan American Container 141 dms (69125 lbs) (Atlantic Concert) Liverpool, 10/6.

ACRYLONITRILE BUTADIENE RUBBER Alba Fwdg 596 bls (39357 lbs) (Oriental Minister) Yokohama, 9/30.

ADIPIC ACID 1920 bgs (105621 lbs) (Bezlas 4) Constanza, 9/29.

AGAR AGAR Alltransport 40 dms (4659 lbs) (American Lynx) Antwerp, 10/3.

Harold Pepper 40 dms (4650 lbs) (Ever Glory) Osaka, 10/4.

ALPHA METHYL DOPA Novopharm 80 dms (3638 lbs) (American Lynx) Bremerhaven, 10/3.

ALUMINUM OXIDE Ran Plastics 240 bgs (6188 lbs) (Rosario) Bremerhaven, 10/4.

ALUMINUM PASTE Gardner Asphalt 160 dms (45635 lbs) (Atlantic Conveyor) Gothenburg, 8/26.

Revell Chemicals 36d dms (42690 lbs) (Rosario) Felixstowe, 10/4.

AMMONIUM BICARBONATE Rhone Poulenc 1440 bgs (74075 lbs) (Rosario) Antwerp, 10/4.

AMMONIUM BIFLUORIDE 880 bgs (45591 lbs) (Ever Living) Hamburg, 10/5.

AMMONIUM PARATUNGSTATE Sassoon Metals & Chemicals 340 dms (41227 lbs) (Bing He) Shanghai, 10/5

AMPICILLIN TRIHYDRATE Beecham 74 kgs (8003 lbs) (Atlantic Conveyor) Liverpool, 8/29.

ANTIMONY REGULUS Minmetals 56 plt (117287 lbs) (Bing He) Shanghai, 10/5.

ANTIMONY TRIOXIDE McGean Rohco (200 bgs (66866 lbs) (Bing He) Shanghai, 10/5.

ANTIPYRINE NF FINE 40 dms (4760 lbs) (Kazimierz Pulaski) Bremerhaven, 10/7.

ARABIC GUM O Steengrale 1 con (16012 lbs) (Tana) Abidjan, 9/23.

Meer 243 bgs (33178 lbs) (Tana) Abidjan, 0/23.

ASCORBIC ACID VITAMIN C Daniel F Young 800 dms (50089 lbs) (Bing He) Shanghai, 10/5.

ASPARTIC ACID Viking Sea Freight 40 bxs (71428 lbs) (Ever Living) LeHavre, 10/5.

ATACTIC COPOLYMER BRASS FAX 114 plt (243452 lbs) (American Hawaii) Rio Grd Do S, 10/5.

BARIUM CARBONATE Cometals 1360 bgs 175856 lbs) (Oriental Minister) Hong Kong, 9/30.

Guy Tomes 272d bgs 1151714 lbs) (Bing He) Kobe, 10/5

BARIUM COMPOUND Nystone Chemicals 29 skd (715d0 lbs) (Atlantic Conveyor) Halifax, 8/29.

BARIUM SULPHATE Ore & Chemical 20 bgs (1161 lbs) (Rosario) Antwerp, 10/4.

BASE MATERIAL FOR PERFUMES Scac Transport 17 pcl (2187 lbs) (Strathconon) LeHavre, 9/25.

BENZOGUANIMINE James E Fox 681 bgs (4443d lbs) (Ever Living) Hamburg, 10/5.

BENZYL ALCOHOL PERFUME CDF Chimie 76 dms (39207 lbs) (California Star) Antwerp, 0/26.

BENZYL CYANIDE Inter Maritime Fwdg 1 tnk (44670 lbs) (Ever Living) Antwerp, 10/5.

BEROLAMINE 28d Berol Chemical 25 dms (33209 lbs) (Rosario) Bremerhaven, 10/4.

BETA HYDROXYNAPHTHOIC ACID 20 plt (27026 lbs) (Strathconon) Rotterdam, 9/26.

BETA NAPHTHOL Leyden Customs Exporters 516 bgs (28763 lbs) (Bing He) Kobe, 10/5.

BLACK PEPPER Fritzsche Dodge B Olcott 166 ctn (17370 lbs) (Actuaria) Algeciras, 6/30.

Meer 58 ctn (2487 lbs) (Actuaria) Algeciras, 9/30.

Fritzsche Dodge 6 Olcott 55 ctn (2443 lbs) (Actuaria) Algeciras, 9/3d.

BLANC FIXE Ore & Chemical 3200 bgs 162435 lbs) (Strathconon) Antwerp, 9/26.

Ore & Chemical 14dd bgs (79401 lbs) (Stefan Starzynski) Rotterdam, 9/29.

560 bgs (37439 lbs) (Rosario) Antwerp, 10/4.

BORIC ACID GRAN & N5 Enichem America 460 bgs (35086 lbs) (Cape York) Salerno, 10/6.

Rhone Poulenc 360 bgs (40000 lbs) (Rosario) LeHavre, 10/4.

BROMOCHLOROPROPANE Rhone Poulenc 60 dms (35715 lbs) (Rouen) Antwerp, 9/16.

BUTYNEDIOL TECH FLAKES GAF 293 dms (42035 lbs) (Stefan Starzynski) Rotterdam, 9/29.

C-E

CADMIUM OXIDE 420 dms (46167 lbs) (California Star) Antwerp, 6/26.

CADMIUM PIGMENT Davies Turner 46 dms (5419 lbs) (Atlantic Conveyor) Liverpool, 9/29.

Whittaker Clark & Daniels 6 dms (370 lbs) (Atlantic Conveyor) Liverpool, 9/29.

19 dms (1173 lbs) (Atlantic Concert) Liverpool, 10/6.

CALCIUM CARBONATE Whittaker Clark & Daniels 365 bgs (40234 lbs) (Atlantic Concert) Liverpool, 10/6.

CALCIUM NITRATE ACS Chemical 5 dms (2502 lbs) (Ever Glory) Tokyo, 10/4.

CAPROLACTONE MONOMER Nissin Intl Transport 60 dms (39930 lbs) (Bing He) Kobe, 10/5.

CASSIA KORINTJI Van De Vries Trdg 167 bgs (22414 lbs) (Leise Maersk) Singapore, 10/4.

CAUSTIC SODA Cida 2 bks (11795 lbs) (Toshiwa Maru) Birkenhead, 10/4.

CAUSTIC SODA POTASH Cida 1 bks (1d86716 lbs) (Toshiwa Maru) Birkenhead, 10/4.

CHILI OIL House of Lawrence 10d ctn (3483 lbs) (Ever Glory) Hong Kong, 10/4.

CHLORODIFLUOROMETHANE John Steer 5 tnk (164503 lbs) (Rouen) Rotterdam, 9/16.

CHLOROMETHYLPYRAZOLONE 14 cak (4687 lbs) (Rosario) Rotterdam, 10/4.

CHROMIC ACID Browning Chemical 320 dms (36096 lbs) (Bing He) Shanghai, 10/5.

CHROMIC OXIDE American Chrome & Chemicals 600 bgs (4503 lbs) (Atlantic Concert) Liverpool, 1d/6.

CITRIC ACID Helm New York Chemical 388 bgs (39565 lbs) (Abuegila) Genoa, 10/8.

CITRONELLA OIL 60 dms (35702 lbs) (Bing He) Kobe, 10/5.

D IMONENE 120 dms (492d7 lbs) (American Lancer) Santos, 10/9.

Polarome Mfg 125 dms (51257 lbs) (American Lancer) Santos, 10/6.

Ungerer 60 dms (32605 lbs) (American Lancer) Santos, 10/9.

DEXTRINE 6d0 bgs (44533 lbs) (Ever Living) Rotterdam, 10/5.

DIACETON ACRYLAMIDE Kyowa Hakko 50 dms (5071 lbs) (Leise Maersk) Kobe, 10/4.

DIAZO RESIN Autotype 1 ctn (9 lbs) (Atlantic Concert) Liverpool, 10/6.

DIETHYLETHYLANILINE 9 dms (2653 lbs) (Atlantic Saga) Rotterdam, 9/30.

DIHYDRO DIBENZO TETRAAZA 20 dms (2522 lbs) (Atlantic Saga) Rotterdam, 8/30.

DIPENTAERYTHRITOL Sumitrans 64D bgs (26783 lbs) (Ever Glory) Tokyo, 10/4.

DIPHENYL METHANEDI ISOCYANATE Alltransport 56 pkg (32758 lbs) (Kazimierz Pulaski) Bremerhaven, 10/7.

DIPHENYLMETHANE 4 4 DIISOCYANATE Jones & Vining 3D dms (17527 lbs) (American Lynx) Felixstowe, 10/3.

EPOXY MOLDING POWDER Hysol 71 pkg (22653 lbs) (Oriental Minister) Yokohama, 9/30

ETHYL ACETATE 1 bks (1155221 lbs) (Golar Petrosea) Rotterdam, 10/2.

ETHYLENEDIAMINE 2 tnk (76836 lbs) (Rosario) Rotterdam, 10/4.

F-L

FENNEL SEEDS William E Martin & Sons 440 bgs (48501 lbs) (Rosario) Felixstowe, 10/4.

FERROUS FUMARATE 345 dms (40311 lbs) (Rosario) Bremerhaven, 10/4.

FLUOROCARBON POLYMER Nichimen 214 dms (25240 lbs) (Leise Maersk) Kobe, 10/4.

FORMALDEHYDE RESIN Oonex 36 pkg (46255 lbs) (Sea Land Pacer) Algeciras, 10/7.

GELATIN Corbelt Intl 694 dms (167632 lbs) (Ever Spring) Fos, 10/6.

GINGER Ouellrada 936 ctn (29571 lbs) (American Hawaii) Santos, 10/5.

GRAPEFRUIT OIL Ungerer 140 dms (57406 lbs) (American Lancer) Santos, 10/9.

GUAR GUM Premcem Gums 800 bgs (40565 lbs) (Oriental Minister) Singapore, 9/30.

GUM OLIBANUM Meer 600 cs (27557 lbs) (Rosario) Felixstowe, 10/4.

GUM TURPENTINE PDM 160 dms (65600 lbs) (Elma Cinco) Santos, 10/6.

HEXANE Shell Oil 1 bks (661150 lbs) (Golar Petrosea) Rotterdam, 10/2.

HEXENYL SALICYLATE Alltransport 1 dms (408 lbs) (Atlantic Saga) LeHavre, 9/30.

HIDE GLUE Teub 6 Cermel 400 bgs (40124 lbs) (American Lancer) Buenos Aires, 10/9.

Transatlantic By Products 76d bgs (79543 lbs) (American Lancer) Rio Grd Do S, 10/9.

HIGH DENSITY POLYETHYLENE 320 bgs (18272 lbs) (Atlantic Conveyor) Gothenburg, 9/28.

HYDROFLUORIC ACID ANHYDROUS Mobay Chemical 3 tnk (102965 lbs) (Rosario) Bremerhaven, 10/4.

HYDROGEN PEROXIDE BOH 17 pkg (260 lbs) (American Lynx) Bremerhaven, 10/3.

IBUPROFEN Intermar Steamship 80 dms (9665 lbs) (Enterprise) Leghorn, 9/30.

INDIGO PURE POWDER Passaic Color & Chemical 640 dms (56336 lbs) (Bing He) Kobe, 10/5.

INOSITOL NF 1 OXYTETRACYCLINE HC M Gurvey 6 Barry 120 dms (7613 lbs) (Bing He) Shanghai, 10/5.

INSULIN CHILLED E R Squibb & Sons 21 plt (27921 lbs) (Atlantic Concert) Gothenburg, 10/6.

IRON OXIDE 1 con (41887 lbs) (Strathconon) Rotterdam, 9/26.

ISODECANOL 1 bks (439680 lbs) (Golar Petrosea) Teesport, 10/2.

ISOPHTHALIC ACID Ashland Chemical 20 bgs (40741 lbs) (Ever Spring) Leghorn, 1d/6.

ISOPROPYL ALCOHOL Royal Lubricants 1 bks (2209558 lbs) (Golar Petrosea) Rotterdam, 10/2.

ISOPROPYLTITANATE Kay Fries 1 tnk (39398 lbs) (California Star) Antwerp, 9/26.

KARAYA GUM Ampak 350 bgs (38966 lbs) (Rosario) Felixstowe, 10/4.

KARAYA GUM SIFTINGS Celanese Water Solube Polym 219 bgs (40556 lbs) (Rosario) Felixstowe, 10/4.

Diamond Shamrock 419 bgs (78916 lbs) (Rosario) Felixstowe, 10/4.

L ARGININE HCL L HISTIDINE HCL Kyowa Hakko 4 pkg (236 lbs) (Leise Maersk) Kobe, 10/4.

L CARVONE American Shpg 30 dms (13228 lbs) (American Lancer) Santos, 10/9.

L CYSTEINE HCL MONOHYDRATE Maroor Development 20 dms (1236 lbs) (Leise Maersk) Tokyo, 10/4.

LICORICE ROOT WHOLE Herbarium 50 bgs (4519 lbs) (Oriental Minister) Singapore, 9/30.

LINALOL SYNTHETIC 80 dms (34038 lbs) (Atlantic Saga) LeHavre, 9/30.

LIQUID SILICONE RUBBER Kiddie Products 6 ctn (319 lbs) (Rosario) Rotterdam, 10/4.

LITHOPONE Ore & Chemical 700 bgs (39700 lbs) (Ever Living) Antwerp, 10/5

LITSEA CUBEBA OIL Euerst Day Lawson 24 dms (10486 lbs) (Bing He) Shanghai, 10/5.

M-N

M AMINOBENZOTRIFLUORIDE D Nedlloyd Lines 21 csk (12593 lbs) (Rouen) Rotterdam, 9/18.

M XYLIDINE VIC 15 csk (7335 lbs) (Rouen) Rotterdam, 9/18.

MAGNESIUM STEARATE VGF Chemical 600 bgs (33907 lbs) (Kazimierz Pulaski) Rotterdam, 10/7.

MALEIC ANHYDRIDE Huels 720 bgs (40961 lbs) (Rosario) Bremerhaven, 1d/4.

White Cross Laboratories 700 bgs (39d44 lbs) (Bing He) Kobe, 1d/5.

MARJORAM Agricola 525 bgs (23148 lbs) (Export Patriot) Alexandria, 10/4.

METHYL 12 HYDROXY STEARATE 2 tnk (77217 lbs) (American Hawaii) Santos, 10/5.

120 bgs (6122 lbs) (American Lancer) Santos, 10/9.

METHYL CELLULOSE Jacase 48 pkg (3280 lbs) (Oriental Minister) Yokohama, 9/3d.

METHYL ETHYL KETONE Royal Lubricants 1 bks (2198198 lbs) (Golar Petrosea) Rotterdam, 10/2.

METHYLCELLULOSE Henkel 440 bgs (22406 lbs) (Rouen) Antwerp, 9/18.

METHYLPENTENE POLYMERS Mitsui 60 plt (70107 lbs) (Bing He) Kobe, 10/5.

60 plt 70107 lbs) (Bing He) Kobe, 1d/5.

MICROCRYSTALLINE WAX Internor Trdg 5d0 pkg (11519d4 lbs) (Cordoba) Salvador, 9/16.

MICROWAX Ind Raw Materials 72 ctn (126372 lbs) (Atlantic Saga) Bremerhaven, 6/3d.

MINERAL WAX Strohmeyer & Arpe 441 bgs (4467d lbs) (Ever Living) Hamburg, 1D/5

MIXED PENTANES Chase Manhattan Bank 49248 brl (4860d914) (Maasstroom) Coatzacoalco, 9/18.

MONOCHLORACETIC ACID 201 dms (44,312 lbs) (Atlantic Conveyor) Gothenburg, 9/29

MONOSODIUM GLUTAMATE Ajinomoto 720 dms (77,989 lbs) (Punta Brava) Santos, 10/02.

720 dms (77,999 lbs) (Elma Cinco) Santos, 10/06

MLM Express 625 dms (154,322 lbs) (Oriental Minister) Busan, 9/30.

MUSK XYLOL Order 16d dms (24,4d5 lbs) (Bing He) Shanghai, 10/05.

MUSTARD Schenkers Intl Fwdrs 6d5 pkg (32,297 lbs) (Stefan Starzynski) Le Havre, 9/29

MUSTARD POWDER House of Lawrence 100 ctn (3,263 lbs) (Ever Glory) Hong Kong, 1d/d4

MUSTARD VINEGAR Haddon House Food Products 3,394 ctn (47,331 lbs) (California Star) Le Havre, 9/26

n-BUTYL METHACRYLATE MONOMER Hemsoth Kerney 2 tnk (70,374 lbs) (Rouen) Rotterdam, 9/18

2 tnk (79,145 lbs) (Strathconon) Rotterdam, 9/25

1 tnk (39,617 lbs) (California Star) Felixstowe, 9/26

NICKEL SULFATE REFINED Afunmet Ind 1,680 bgs (106,685 lbs) (Ever Living) Antwerp, 1d/05

NIGROSINE, SOLUBLE Stults 100 dms (7,469 lbs) (Vishva Shakti) Calcutta, 10/07

NUTMEG Aot Europe 260 bls (26,680 lbs) (California Star) Antwerp, 9/20.

NUVA FH MONOMER 18 hob (2,654 lbs) (Rouen) Rotterdam, 8/16.

o-DIANISIDINE Dunlap Alpers & Mott 19d dms (31,446 lbs) (Oriental Minister) Kobe, 9/30

O-R

OIL BLACK PEPPER 13 ctn (1,213 lbs) (Actuaria) Algeciras, 9/30.

OLIVE OIL Sonia Anita Imports 3,69d crt (186,066 lbs) (Ever Spring) Leghorn, 10/06.

ORANGE OIL Fritzsche Dodge B Olcott 250 dms (102,515 lbs) (American Lancer) Santos, 10/09.

Ungerer 60 dms (32,805 lbs) (American Lancer) Santos, 10/06.

OREGANO CGM French Line 1000 bgs (22,046 lbs) (Atlantic Saga) Le Havre, 9/30.

Durkee Foods 1102 bgs (22,046 lbs) (Export Patriot) Piraeus, 10/04.

EL Scott 110d bgs (22,046 lbs) (Export Patriot) Piraeus, 10/04.

KHL Flavors 1200 bgs (23,999 lbs) (Export Patriot) Istanbul, 10/04.

Maurice J Golombeck 1102 bgs (22,059 lbs) (Export Patriot) Izmir, 10/04.

Nubia Valenzuela 1 cs (220 lbs) (Silver Dream) La Guaira, 9/24.

William E. Martin 650 bgs (13,001 lbs) (Export Patriot) Istanbul, 10/04.

ORTHO CHLOROBENZALDEHYDE Fallek Chemical 6 dms (4,497 lbs) (Leise Maersk) Tokyo 10/04.

ORTHO XYLENE BASF Chemicals 1 bks (4,460,126 lbs) (Golar Petrosea) Rotterdam, 10/02.

OXALIC ACID Browning Chemical 4632 bgs (234,672 lbs) (Bing He) Shanghai, 10/05.

1360 bgs (75,707 lbs) (Bing He) Shanghai, 10/05.

Quadra Chemicals 84d bgs (35,658 lbs) (Bing He) Shanghai, 10/05.

OXYNITROPHENYLARSENIQUE ACID Rhone Poulenc 200 dms (24,251 lbs) (Rosario) Le Havre, 1D/04.

p-CHLORO-o-NITRANILINE 32 cak (15,408 lbs) (Rosario) Rotterdam, 10/04.

p-DIETHYLAMINOBENZALDEHYDE 52 dms (13,091 lbs) (Atlantic Saga) Rotterdam, 9/30.

p-METHYL BENZOYL CHLORIDE Kay Fries 76 brl (37,615 lbs) (Stefan Starzynski) Bremerhaven, 9/28.

p-NITROANILINE TRTRG 152 csk (38,457 lbs) (Strathconon) Rotterdam, 5/29.

p-NITROBENZOIC Nobel Chemicals 24 plt (41,462 lbs) (American Lynx) Bremerhaven, 10/03.

p-TOLUENESULFONYL CHLORIDE Dunlap Alpers & Mott 35 dms (13,889 lbs) (Oriental Minister) Yokohama, 9/30.

p-W OXALIC ACID Quadra Chemicals 1280 bgs (71,113 lbs) (Bing He) Kobe, 10/05.

PALM KERNEL OIL Order of Shipper 2 bks (2,221,613 lbs) (Stolt Eagle) Pasir Gudang, 10/02.

PALM OIL Angela Ankoms 6 brl (1,056 lbs) (Tana) Monrovia, 9/23.

Eva H Witherspoon 3 brl (105 lbs) (Export Champion) Monrovia, 10/01.

George Boaman 60 brl (3,966 lbs) (Tana) Monrovia, 9/23.

J Tyrome Korkulan 20 brl (6,173 lbs) (Tana) Monrovia, 9/23.

PALMITIC ACID Artex 900 bgs (49,842 lbs) (Ever Glory) Singapore, 10/04.

PARACETAMOL POWDER Binochem 280 dms (17,902 lbs) (Bing He) Shanghai, 10/05.

PENICILLIN Novo Laboratoires 201 dms (13,073 lbs) (Atlantic Concert) Gothenburg, 10/06.

PENTANE Northville Ind 9,177,000 gal (46,650,560 lbs) (New Vanguard) Pajaritos, 10/03.

PHENOXY ACETIC ACID Bristol Myers 792 bgs (46,939 lbs) (Kazimierz Pulaski) Rotterdam, 10/07.

PHENOXYACTIC ACID Bristol Myers 792 bgs (45,939 lbs) (Stefan Starzynski) Bremerhaven, 9/29.

PHENYL ACETIC ACID Pan American Container 100 dms (11,6B4 lbs) (Atlantic Concert) Liverpool, 5D/06.

POLYACETAL 105 bgs (8,537 lbs) (Rosario) Rotterdam, 10/04.

POLYCARBONATE RESIN GRADE AO 550 Marubeni America 31 bgs (44,459 lbs) (Bing He) Kobe, 10/05.

POLYESTHER CROOAMIDE Polyosther 22D kgs (24,261 lbs) (Atlantic Concert) Liverpool, 1D/06.

POLYPROPYLENE RESIN NF 905A Sumitrans 120 plt (126,722 lbs) (Bing He) Kobe, 10/05.

POLYVINYL ALCOHOL Marubeni America 60 pkg (65,01D lbs) (Oriental Minister) Kobe, 8/30.

POLYVINYL CHLORIDE EXPAND HAMLE Pierce & Stevens Chemical 419 bgs (3,666 lbs) (Atlantic Conveyor) Gothenburg, 9/28.

POLYVINYLIDENE CHLORIDE Pierce & Stevens Chemical 160 dms (26,457 lbs) (Atlantic Concert) Gothenburg, 10/06.

POTASSIUM CARBONATE BDP Intl 720 bgs (41,059 lbs) (Stefan Starzynski) Rotterdam, 9/29.

Kay Fries 400 bgs (41,056 lbs) (Ever Living) Antwerp, 10/05.

POTASSIUM CYANIDE Mitsui 400 ltm (44,800 lbs) (Ever Glory) Osaka, 10/04

POTASSIUM PERCHLORATE Nu Tech Chemical Ind 15D dms (41,867 lbs) (Atlantic Concert) Gothenburg, 10/06.

PSYLLIUM SEED HUSK Commodity Service Intl 320 dms (35,121 lbs) (Rosario) Felixstowe, 1D/04.

PVC GRANULES Daniel F Young 2 cs (3,776 lbs) (Atlantic Concert) Liverpool, 10/06

S-T

SESAME OIL PURE FOOD GRADE AJ Murray 76 dms (35,696 lbs) (Bing He) Shanghai, 1D/05.

SILICONE Sommer 6 Maca 10 plt (12,346 lbs) (Atlantic Saga) Rotterdam, 9/30.

SILICONE RUBBER J Sil 2 plt (3,086 lbs) (Atlantic Conveyor) Liverpool, 9/29.

SODIUM ALGINATE Nolties 600 sks (41,760 lbs) (American Lynx) Bremerhaven, 10/03.

SODIUM BICHROMATE 300 bgs (33,466 lbs) (Dacias 4) Constanza, 9/26.

SODIUM CARBOXYMETHYL CELLULOSE A American Import Service 42 bgs (2,438 lbs) (American Lynx) Rotterdam, 1d/03.

SODIUM CYANIDE 352 dms (66,090 lbs) (Rosario) Rotterdam, 1D/04.

Montedison 252 dms (36,366 lbs) (Export Patriot) Leghorn, 10/d4

SODIUM DICHROMATE CRYSTALS Calabrian Intl 760 bgs (77,337 lbs) (California Star) Antwerp, 9/26.

SODIUM HYDROXIDE Mallinckrodt 336 dms (39,165 lbs) (Atlantic Conveyor) Gothenburg, 9/29

336 dms (39,185 lbs) (Atlantic Concert) Gothenburg, 10 06

SODIUM METABISULPHITE ICC Ind 350 bgs (36,352 lbs) (Stefan Starzynski) Bremerhaven, 9/29

SODIUM PHOSPHATE Mitrans 374 ctn (3,156 lbs) (Oriental Minister) Kobe, 9/30.

SODIUM PHOSPHATE DIBAS Mitrans 4 bgs (225 lbs) (Oriental Minister) Kobe, 9/30

SODIUM TRIPOLYHOSPHATE GRANULAR Sel Customs Brokers 432 bgs (44,271 lbs) (Ever Spring) Leghorn, 10/06.

SODIUM TRIPOLYPHOSPHATE Advent Chemical 1311 bgs (91,396 lbs) (Strathconon) Antwerp, 9/25.

New Chine Trdg 560 bgs (32,351 lbs) (Bing He) Shanghai, 10/05.

SORANE RESIN Jones & Vining 50 dms (24,602 lbs) (American Lynx) Felixstowe, 10/03.

STEARYL ALCOHOL Henkel 2000 bgs (69,506 lbs) (Rosario) Antwerp, 10/D4.

SULFADIMIDINE Universal Transcontinental 360 pkg (23,810 lbs) (Oriental Minister) Hong Kong, 9/30.

SULFADIMIDINE BP80 Flavine Intl 160 kgs (20,812 lbs) (Bing He) Shanghai, 10/05.

SULFAGUANIDINE B SULFATHIAZOLE Universal Transcontinental 360 dms (43,764 lbs) (Sea Land Pacer) Algeciras, 10/07.

SULFAMETHOXAZOLE Shionogi 84 dms (10,165 lbs) (Leise Maersk) Kobe, 10/04.

SULFUR PRECIPITATED USP Davos Chemical 20 dms (2,381 lbs) (Stefan Starzynski) Bremerhaven, 9/29.

TARTARIC ACID VICHY Tartaric Chemicals 600 bgs (44,974 lbs) (Export Patriot) Genoa, 1D/04.

THIAMINE HYDROCHLORIDE Daniel F Young 60 dms (3,966 lbs) (Bing He) Shanghai, 10/05.

K&M Custom Brokers 60 dms (3,988 lbs) (Bing He) Shanghai, 1D/05.

THIONYL CHLORIDE Uniroyal 1 tnk (39,551 lbs) (California Star) Antwerp, 6/26.

THIOUREA James E Fox 664 bgs (45,466 lbs) (Ever Living) Hamburg, 1D/05.

TITANIUM DIOXIDE Blue Bell Chemical 600 bgs (41,602 lbs) (American Lynx) Rotterdam, 10/03.

Goodyear Intl 1440 bgs (62,144 lbs) (Sea Land Pacer) Algeciras, 10/07.

NL Ind 4000 bgs (206,791 lbs) (Strathconon) Antwerp, 8/26.

6400 bgs (331,133 lbs) (Rosario) Rotterdam, 10/04.

Rhone Poulenc 400 bgs (209,217 lbs) (Strathconon) Antwerp, 9/25.

Superior Materials 1600 bgs (83,004 lbs) (American Lynx) Rotterdam, 10/03.

800 bgs (40,124 lbs) (Sea Land Pacer) Algeciras, 10/07.

WTC Ocean Freight 4600 bgs (207,453 lbs) (Ever Living) Antwerp, 10/05.

NL Ind 800 bgs (82,981 lbs) (Stefan Starzynski) Rotterdam, 9/29.

600 bgs (82,961 lbs) (Kazimierz Pulaski) Rotterdam, 10/07.

Kemira 320 bgs (39,145 lbs) (Kazimierz Pulaski) Bremerhaven, 10/07.

Huxley Raw Material 760 bgs (39,890 lbs) (Kazimierz Pulaski) Bremerhaven, 10.07.

Huxley Raw Material 760 bgs (39,590 lbs) (Stefan Starzynski) Bremerhaven, 9/29.

Rhone Poulenc 3200 bgs (167,373 lbs) (Strathconon) Le Havre, 9/28.

NL Ind 9600 bgs (452,564 lbs) (Rouen) Antwerp, 9/19.

TOLULENE DIISOCYANATE Stag 3 cab (152 lbs) (Atlantic Saga) Rotterdam, 9/30.

TRIETHYLAMINE 2 tnk (83,228 lbs) (Rouen) Rotterdam, 9/16.

TRIMETHYLPHENOL 1 tnk (36,061 lbs) (Strathconon) Bremerhaven, 9/25.

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SOUTHWESTERN LIQUIDATION

VESSELS-PRESSURE-316SS

GAL.	PSI	GAL.	PSI
14,000	30	5,800	30
13,000	60	5,600	69
11,000	30	3,400	30
7,000	30	3,200	103
6,400	50	900	352

OTHERS FROM 50 TO 1,000 GAL.

TANKS-316SS

36,000, 18,500, 13,500 (2), 12,000, & 6,000 GAL.
MANY FROM 100 TO 5,000 GAL.

HEAT EXCHANGERS-316SS

3,560, 2,480, 853, 617, 614, 471, 350, 102 SQ. FT.

HEAT EXCHANGERS-TITANIUM

1,470, 1,140 SQ. FT. 440/30 PSI

REACTORS-316SS

5,100 GAL. 350 PSI AGIT., 3,170 GAL. 359 PSI AGIT. (4)

MISCELLANEOUS

CENTRIFUGAL PUMPS - 5 TO 100 HP 316SS (40)
HEATER-15MM BTU/HR THERMAL PRODUCTS GAS FIRED SKID MNTD. (2)
COMPRESSORS-1,240 CFM @ 110 PSI 250 HP (2)
220 CFM @ 215 PSI 150 HP (2)
AIR FIN COOLERS TO 80,410 SQ. FT. (6)
ALUMINUM BINS & SILOS TO 3,500 CU.FT.
COLUMNS-316SS-132"X110'X43 TRAY, 90"X35'X10 TRAY
16"X33' PACKED 30 PSI (2)

I/RAND, XLE AIR COMPRESSORS: 20½ x12½ x 8½, 100 PSI 300 HP & 16 x 16 x 7, 40 psi 200 HP
KEMP INERT GAS GENERATOR MDL BCV 75 L 75000 SCFH

[illegible]

CORN SYRUP/STARCH PLANT LIQUIDATION

200,000 lbs/HR @ 300 psi package. boiler
150,000 lbs/HR @ 700 psi package boiler
50,000 lbs/HR @ 250 psi package boiler
6'x50' 304 SS rot. hot air dryer
(2) 5'x61' Hennanburg 304 SS Rol. Dryers complete (3) 5'x 25'
4'x31' L, 72 tubs Andreson SS rot. st. dryer
24,000 sq. ft. triple effect evap. Titanium tubes
600 sq. ft. U.S. Autojet PR/LF filter coilcole lud (3)
500 sq. ft. Hercules 316 ELC pr/lf filter (4)
12'x15' Elmco belt CS rot. rec. filter (2)
7'6"x16' Elmco 316 SS precoat filter (2)
1900 sq. ft. Heat. C HT. Exchanger 150/75 UNUSED
Nash Vac. Pumps Mdl. CL 3001 & Mdl. 0001
8'x10' Elmco 316 SS precoat filter (2)
9,000 gal SS mix tank 13'x8'
6,500 gal 316 SS cone botm mix tank 12'7'8"
5500 gal 316 SS mix tank 12'x6' 5HP (11)
3000 gal SS mix tank 9'x6'6" (3)
3000 gal Blaw Knox 316 SS vac. tank, 6'6"x 12' 15 psi/FV
PLUS MANY MORE ITEMS CALL FOR DETAILS
BUY FROM THE SITE AND SAVE

ALABAMA CHEMICAL PLANT

(3) 290 cu. ft. 310 SS rotary vac dryer systems 10'x 14'
Elmco rotary vac filter
(2) Niagara 36 H 190 filters SS
(1) Late model H9 vac pump w/fuller V 300 booster
Reactors: 4000 gal. G/L body, 100 FV/150 FV jkt.
(4) 3300 gal. SS 60/30 HP agit w/coils 100 psi
(1) 3300 gal. SS 30 HP, GTW, 300psi coils
(2) 2000 gal. 316 L SS, 75/200 psi jkt
Tanks: 1500 gal. 316 L SS agit.
6000, gal. (3) 4000 gal. Monel vertical
4700 gal. G/L Pfaudler Chemstor 30 psi
SS Heat Exchangers from 100 to 500 sq. ft. plus many misc. items.

[illegible]

TWO LARGE LIQUIDATIONS

48"x24" TOLHURST SS "BATCHMATIC" CENTRIFUGE (6) COMPLETE ... LATE MODEL
18" DIA. SS BAKER PERKINS TERMEER PUSHER CENTRIFUGE
60"x40' JEFFREY SS CONTINUOUS FLUID BED DRYER (2)
60"x20' JEFFREY SS FLUID BED DRYER
6'6"x40' FULLER CS ROTARY DRYER, 50 HP
6'6"x32' CS COUNTER-CURRENT ROTARY DRYER
ST REGIS [illegible] BAGGER MDL. 10-VC3
5'4" DIA. DUCON [illegible] SCRUBBER TYPE L

3-95 CU. FT. DAY SANITARY SS RIBBON BLENDERS, 15 HP
1-43 CU. FT. DAY SANITARY SS RIBBON BLENDER
1-8'x12'[illegible], K-S [illegible] ROTARY VACUUM FILTER
1-1'x3' K-S PRECOAT ROTARY VACUUM FILTER ... COMPLETE WITH ALL ACCESSORIES
1-7' DIA. BOWEN SPRAY DRYER ...
COMPLETE WITH ALL ACCESSORIES

[illegible] AVAILABLE

[illegible]

CENTRIFUGES

BASKET
46"x30" Sharples 316 mdl. T1600 (2)
48"x30" Tolhurst Hasl. C Automatic (3)
46"X24", 316SS, Automatic, W/plow

PUSHER TYPE
DeLaval, 25", 2-Stages, 316SS

DISC/BOWL
DeLaval, Mdl. BRPX-309, SS, vert., & Mdl. BA-00,SS
Westphalia 304 SS Mdl. SAMN-5036
Delaval, 6PRX-213, 316 SS (2)

SOLID BOWLS
Sharples, Mdl. P1000, P3000, P5000, P5400, (2), SS
Sharples Mdl P-3400 (3)
Bird, 40"X60", 36"X72", 32"X50", 24"X38", 10"X42", 10'x28"12"x 30" SS
Podbielniak Mdl. 6000 comp. w/controls

VACUUM DRYERS
325 cu.ft. Abbe, 304 SS dbl. cone
200 cu.ft. 316SS, 6'6"x11'6", rotary
164 cu.ft. Paterson "Conaform," 316SS Dbl. cone
150 cu. ft. SS 304 SS Twin Shell
150 cu.ft. SS, & 150 cu.ft. Nickel clad
125 cu.ft. SS & CS, 4'x14', 105/90/150 psi
125 & 83 cu. ft. Buflovak SS Rotary
90, 70, 60, 50, 30, cu. ft. PK SS & G/L dbl cone
70 cu. ft. KS Titanium dbl. cone
40, & 15 cu.ft. Stokes, SS rotary

WE WANT TO BUY YOUR SURPLUS EQUIPMENT PROCESS UNITS AND COMPLETE PLANTS. WE HAVE OUR OWN DISMANTLING CREWS

GLASS • GLASS • GLASS REACTORS

5,000 GAL. DEDIETRICH 100FV/90 REGLASSED
4,000 GAL. DEDIETRICH 100/90 PSI
3,000 GAL. DEDIETRICH, 100/90, PHILA. DRIVE
3,000 GAL. RA SERIES, 100/90 TW, REGLASSED(2)
2,000 GAL. RA SERIES, 100/90 TW, REGLASSED
1,000 GAL. RA SERIES, 100/90 TW, REGLASSED
1,000 GAL. E SERIES 25/90 (4)
750 GAL. 25/90 TW, (2)
500 GAL. RA SERIES, 100/90, TW
400 GAL. E, SERIES, 25/90, TW
300 GAL. E, SERIES, 25/90, TW
200 GAL. E, SERIES, 25/90 REGLASSED, TW
100 GAL. E, SERIES, 25/90, TW

OVER 100 GLASS LINED REACTORS IN STOCK

GLASS LINED TANKS

FROM 5-22,000 GALLONS
TRAILER LOADS OF GLASS LINED PARTS AVAILABLE

• LOU FALCONE-OUR G/L SPECIALIST WITH 21 YRS. EXPERIENCE IS HERE TO HELP YOU! •

STAINLESS STEEL REACTORS

20,000 GAL. 304SS, 40 & FV
9,000 GAL. 304 SS, 50/S PSI
8,500 GAL. INCONEL, 40/60 PSI AGIT.
6,000 GAL. 304SS, 100/15 PSI
4,200 GAL. 318 ELC, 50FV/50 PSI
3,000 GAL. 318 ELC, 75 FV/180 PSI
2,800 GAL. 304LSS, 25FV/100 PSI
2,000 GAL. 316SS, 1,000/100 PSI
1,300 GAL. 315SS, 150FV/125 PSI
1,000 GAL. 318SS, 15FV/42 PSI
800 GAL. 318SS, 140FV/50 PSI (3)
750 GAL. 318 ELC, 180FV/140 PSI
500 GAL. INCONEL, 50 FV/50 PSI
400 GAL. HAST C., 210 FV/180 PSI

WE HAVE OVER 700 SS TANKS IN STOCK

CALL NOW ABOUT GIANT RHODE ISLAND & NEW JERSEY LIQUIDATION MOST EQUIPMENT STILL INSTALLED

(89) Glass lined & SS Reactor systems complete with condensor, receivers and control panels. from 50 gal. to 4000 gal.
(30) Filter Presses polypro & SS from 18" to 56" plate/ frame & recessed plates.
(25) Vacuum dryer systems complete with condensers, vacuum pumps and receivers.
Double Cone: glass & SS.
Rotary Vacuum Dryers 316 SS
Vacuum Shelf Dryers SS and Heresite lined.
(18) Centrifuges 316 SS automatic basket centrifuges complete with controls and nitrogen purge
Scrubber systems/Vacuum filter systems/Glass lined and SS tank farms.

MUCH MORE!!!

30,000 Gal. 1974 Propane Tank 250 PSI
10,000 Gal. 347 SS Tanks (3)

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GOOD, USED, CHEMICAL, PHARMACEUTICAL & RELATED EQUIPMENT - CENTRIFUGES, DRYERS, FILTERS, REACTORS, TANKS ETC.
WE WILL PURCHASE INDIVIDUAL ITEMS OR COMPLETE PLANTS.
CALL OUR OFFICE TODAY. TOP DOLLARS PAID. NO DEAL TOO BIG OR TOO SMALL.

DRYERS

Drum Dryers/Flakers
(1) 24" dia. x 36" Buflovac SS dble. drum dryer
(2) 32" dia.x 108" Blaw Knox CI dble. drum dryer
(1) 32"dia. x 17'6" Sandvik SS belt flaker
(1) 36"dia.x 10' Buflovak CI dble. drum dryer
(3) 42"dia.x120"Blaw Knox CI dble. drum dryer
(1) 46"dia.x 26" drum flaker, chrome plated drum
(1) 46"dia.x 40" CI flaker, mfg. by Buffalo Foundary
(1) 46"dia.x 40 drum flaker, nickel plated drum, mfg. Blaw-Knox

Fluid Bed
(1) 60 Kg. Aeromatic, Batch, 6'x6', 89,000
(1) 100 Kg. Aeromatic Model ST 100, sanitary SS
(1) Fitzpatrick Model FA 250, SS, 20 HP XP

Holoflite
(1) Western Precipitation Model P9OSSO-A, twin screw, 12" dia. x 20' long, SS constr., jckt. rated 15 psi, complete with 7.5 HP vari-speed drive.
(1) New/Never-Used Joy Processor, CS, single screw, 16"x16' long, rated 110 psi @ 340° F., sprocket & chain drive by 1.5 HP varispeed drive.

Rotary Vacuum
(1) 200 Cu. Ft. Stokes, SS constr., complt.
(2) 165 Cu. Ft. Pfaudler, Double Cone, G/L, 30 &FV/50 psi jkld., 15 HP veri-drive
(1) 150 Cu. Ft. Blaw Knox, Nickel
(2) 132 Cu. Ft. Stokes, Nickel
(1) 72 Cu. Ft. Blaw Knox, SS
(1) 60 Cu. Ft. Titanium Double Cone
(1) 50 Cu. Ft. Gemco, 316SS sanitary, double cone
(1) 37.6 Sq. Ft. Horiz. Thin Film, vac. Int. & 150 psig, 304/316SS
(1) 37 Cu. Ft. Gemco, SS
(1) 30 Cu. Ft. P-K Twin Shell, 304SS
(1) 20 Cu. Ft. Abbe Twin Cone, 304SS

Spray
(1) 30"x3' Bowen Laboratory w/3' cone bottom, SS constr., w/centrifugal atomizer, 3 HP blower & motor.(1)
(1) Niro lab size 32"diax2'w/2'cone w/centrif. atomizer SS contacts
(1) 16' dia. Bowen complt. system SS contacts, new 1976

CENTRIFUGES

(1) Delaval BRPX 309, SS, 20HP
(1) Unused Model B-10 Podbielniak, Alloy 20
(1) Sharples AS-26, SS
(2) Sharples AS-16P, 316SS
(1) Alfa-Laval SS Decanter, Horiz., Mdl. NX314
(2) Dorr Oliver Mdl. CH30 CSU "Merco," 316SS contacts, 150 HP
(1) Baker Perkins S-32 "Pusher Type," SS, 50 HP
(1) Bird 18" x 28", 316 ELC, contour bowl.
(3) Bird 24"x38", 316SS, 40 HP
(3) Sharples P-3000, 316SS, 30 HP
(1) Sharples P-1000, SS 20HP
(1) Unused Bird 36 x 96, 317L SS
40" x 20" Tolhurst centrifuge, Xynar lined, perf. basket
(1) Tolhurst 48" x 24" perf. basket, 316SS sanitary, auto. plow & discharge, rated 66 #/cu. ft. @ 900 RPM, 20 HP XP.
(1) Tolhurst 48" x 24" Selchmaster, 316SS, perf. basket, w/hydr. plow & 20 HP hydr. drive
(1) Tolhurst 48"x24" Selchmaster, rubber lined, perf. basket, w/hydr. plow & 20HP hydr. drive
(2) Tolhurst 48" x 24" Selchmaster, Heresite lined, perf. basket, w/hydr. plow & 20 HP hydr. drive
(1) Western states 48"x 24", 316 SS
(1) Fletcher 48"x 26" Suspended type, SS perf. basket, 20/10 HP
(1) Sharples Tornado 46" x 30", 316SS, perf. basket, 40 HP XP
(1) Alfa Laval Model MAPX 210 T24, SS wetted parts
(2) Sharples C-27, 316 SS, wetted parts, 40 HP
(1) Sharples C-20, Super-D-Hydrator, SS, 30 HP
(1) Dorr Oliver Mercone Screener Model C-400 X2, all SS, twin screw disch., 10 HP

PARTIAL LISTING ONLY

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LIQUIDATION OF 160MM #/YR. SODIUM TRIPOLYPHOSPHATE PLANT- KEARNY, NEW JERSEY

1-8' dia. x 50' Bartlett Snow Rotary Dryer, SS, 100 HP.
1-8' dia. x 50' Louisville Steamtube Rotary Dryer, SS clad, 40 HP.
1-11'6" x 70' lg. Bartlett Snow Calciner, 316SS, 1100°C., complete.
1-11'6" dia. C.E. Reymond Separator, single whizzer, CS constr.
1-24,000 Gal. Mix Tank, SS constr., 16' dia. x 16', 20 HP.
1-20,000 Gal. Storage Tank, SS constr., 16" dia. x 14'.
2-10,000 Gal. Storage Tank w/-jckt., SS constr., atmos. Int., 150 psi jckt.
1-10,000 Gal. Mix Tank, SS constr., 13' dia. x 10', 30HP.
1-10,000 Gal. Mix Tank w/Int. coils, 13' dia. x 10', 30 HP.
1-Marley NC Tower, 88"W. x 14'6" L. x 9'H.
1-1130 sq. ft. Micro-Pul Reverse Jet Dust Collector, CS constr.
*Large Quantity Silos. Many Screw Conveyors Available-various sizes, CS & SS construction.

BUY DIRECT FROM PLANT SITE AND SAVE!!!
CALL FOR COMPLETE DETAILS.

EVAPORATORS

(1) 1 Sq. Ft. Artisan "Kontro" Ajust-O-Film sys., 316SS
(1) 1.4 Sq. Ft. Luwa Wiped Film, 316SS, 1.5 HP
(1) 1.4 sq. Ft. Luwa thin film SS
(1) 2.5 Sq. Ft. Rodney Hunt Turbo Film 347 SS
(1) 5.4 sq. Ft. Luwa filmtruder, 316 LSS
(1) 6.54 Sq. Ft. Votator Evaporator System, 316 SS contacts, 15 psi & FV & Int., 150 psi jkt.
(1) 6.7 Sq. Ft. Rodney Hunt Turbo-Film, 304 SS contact parts, 15 psi & FV/150 psi jckt.
(1) 10.8 Sq. Ft. Luwa SS Wiped Film Evap. System, 15/550 psi
(1) 19.5 Sq. Ft. Votator Turba-Film, 304 Sanit. SS FV/150 psi 10HP
(1) 20 Sq. Ft. Kontro Horiz. Adjust-O-Film, 316ELC, 50 psig, 15 HP
(1) Approx 31 Sq. ft. Vert., Turbo-Film Processor, 304 SS Contacts
(1) Like New 37.8 Sq. Ft. Luwa Horiz. Thin-Film Dryer, 304/316L SS
(1) 40 Sq. Ft. Kontro Adjust-O-Film, SS constr., 20 HP
(1) 47 Sq. Ft. Artisan rising Film, Hast. "C"
(1) Approx 51 sq. ft. Pfaudler Wiped film, 316 SS, 100/85 & FV
(1) 80 Sq. Ft. Kontro Wiped Film Syst., SS constr., FV/150 psi, 40 HP
(1) UNUSED 86 sq. ft. Luwa thin film dryer horiz. 316 L wetted parts, FV Int., 150 psi sat steam jkt.
(1) 141 Sq. Ft. Rodney Hunt Turbo-Film, 316 SS 15 psi Int., 35 psi jkt 40 HP XP

FILTERS

Pressure Leaf
1-562 Sq. Ft., 316ELC, Hercules, 26 leaves
1-512 Sq. Ft., 318SS, Niagara, 21 leaves
1-400 Sq. Ft. R/L Sparkler
1-327 Sq. Ft., 304SS, Ind. Filter, 11 leaves
1-320 Sq. Ft. Durco 318 SS, 11 Leaves
1-259 Sq. Ft. Pronto Mdl. #3259, 75 psig
1-200 Sq. Ft., SS, Hercules, Horiz.
1-191 Sq. Ft. Enzinger, SS, Vert., 75 psi
1 - 157.64 sq. Ft. Sparkler model 55-5-28, 318SS
1-150 Sq. Ft. Horiz., 12 Vert. Leaf 318SS
1-135 Sq. Ft. Ni, Bowser, Vert.
1-35 Sq. Ft. Hercules Model 5, 318 SS, horiz. tank vert leaves 50 psi
1-Sparkler Mdl #3309 SS constr.
1-Sparkler Mdl.#18 0 12, SS const.
1-Sparkler Mdl.#16 0 4, constr.
1-Sparkler Mdl.#33S 28, constr.

Rotary Vacuum
1-56.5 Sq. Ft. KS, Inconel 600
1-58.5 Sq. Ft. K-S, 316SS, flexibelt disch.
1-07.92 Sq. Ft. Feinc, SS wetted parts, spring disch., 58" dia. x 8' face drum
1-132 Sq. Ft. Dorr Oliver, 304SS, maxibelt disch.
1-200 Sq. Ft. Elmco, 318SS, 8'x8'
4-250 Sq. Ft. O.O. 318L SS Precoat, 8' x10', sanit
1-250 Sq. Ft. K-S 316SS, coil disch.
1-300 Sq. Ft. Elmco, 315SS wetted parts, precoat type w/knife disch., 10" dia. x 10' drum, compl. w/control panel & aux. equipment
1-314 Sq. Ft. Elmco, precoat disch., 316SS
1-400 Sq. Ft. Elmco, CS, Precoat
1-500 Sq. Ft. Elmco, 316SS, belt disch.
1-3'x1' 316SS, knife disch.
1-3'x1' Dorr Oliver, FRP w/receiver & Nash H4 vac. pump, 10 HP
1-3'x 1' K-S comp. sys., 316 SS Flex-belt disch

BLENDERS

800 Cu. Ft. Jktd. Dbl.Rbn., CS
Approx. 460 Cu. Ft. CS, 75HP
UNUSED 460 Cu. Ft. Marion Paddle, CS, 75 HP
300 Cu. Ft. CS Dbl. Cone, 30 HP
400 Cu. Ft. J.H. Day Dbl. Ribbon Carbon Steel Contr, 40 HP (2)
200 Cu. Ft. KS 316SS Dbl. Cone
175 Cu. Ft. P-K Twin Shell, 316SS
150 Cu. Ft. J. H. Day Dbl. Ribbon Carbon Steel Contr. 25 HP (2)
59.3 Cu. Ft. CS Dbl. Cone, 7.5 HP
83 Cu. Ft. Marion Paddle, CS
60 Cu. Ft. 304 SS P-K, Twin Shell, w/Int. bar
80 Cu. Ft. Gemco Dbl. Cone, 304SS
37 Cu. Ft. Gemco SS
30 Cu. Ft. P-K, 304 SS, W/liq. bar.
20 Cu. Ft. P-K, Twin shell, SS
16 Cu. Ft. Robinson Dbl. Rbn. CS
15 Cu. Ft. WC Marion SS
10 Cu. Ft. Gemco dbl. cone, CS, 1½HP
10 Cu. Ft. P-K Sanit Twin Shell 1½HP
10 Cu. Ft. Howes, CS, Dbl. Rbn.
5 Cu. Ft. SS, Dbl. Cone W/liquid-solids bar
10" P-K zig zag

COFFEE PLANT LIQUIDATION

(1) Mdl. #DASO-6 Fitzmill w/15 HP motor, on stand.
(1) Mdl. #D-6 Fitzmill w/16 HP main motor & 2 HP on stand.
(1) Mdl. #2DH Micro-Pulverizer.
(1) Mdl. #3TH Micro-Pulverizer, SS, w/40 HP main motor & ¾ HP screw motors.
(1) Micro-Pulsair SS Reverse Jet Dust Collector, Model #64-S-6-20.
(1) 6" x 42" Votator Scrapped Surface Heat Exchanger, w/5 HP motor & jckt.
(1) 48" Sweco Single Deck Screen w/cover, SS constr., 1 HP
(1) 32" w. x 8' lg. Witte Vibrating Conveyor, SS, w/cover, 2-deck.
(1) 2'x6' Witte SS Fluid Bed Dryer w/perf. plate.
(1) 32" W. x 13' Sandvick Belt Flaker, SS, 6' cooling section.
(1) Stokes Freeze Dryer System, complt. w/prebreaker, micro-vac. & York chiller.
(1) Reitz Disintegrator, 30 HP, Model #RP12-K122.
(2) Jones Dewatering Presses.
(1) 1500 Gal. SS Jcktd. Mix Tank, 3 HP, dished top, flat bottom.
(2) 2000 Gal. SS Mix Tanks, sanitary fittings.
(2) 1500 Gal. SS Mix Tanks, sanitary fittings, ¾ HP Lightnin.
(1) 2000 Gal. SS Mix Tank, sanitary fittings, 3 HP Lightnin.
(2) 2000 Gal. SS Storage Tanks.
(2) 1600 Gal. SS Mix Tanks, sanitary fittings, 3 HP Lightnin.
(1) 1000 Gal. SS Storage Tank, agitator mount, (no agitator)
(1) 1000 Gal. SS Jcktd. Mix Tank, atmos. Int., 150 psi jckt.
(3) 1500 Gal. SS Mix Tanks, 3 HP Lightnin.
(1) Gaulin Homogenizer, KL 81 SS, Type 620 HO, SS.
(1) Gaulin Homogenizer, KL 35 BS, Type 120 KG, SS.
(2) 22' Dia. Spray Dryers, complete system.

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1 - Approx. 51 Sq. Ft., Pfaudler, Wiped Film Evapor. 316 SS wetted parts ASME Coded,. Jacket rated 100 psi w/Internal vacuum. Complete w/flange mounted motor to Pfaudler TW drive w/-mechanical seal, lubricator & integral heat exchanger.

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REACTORS

Glass Lined
4,000 Gal. Pfaudler, 100/90 psi, TW
4,000 gal Pfaudler, 50/30 psi
3,700 gal Glascote, 50 & FV/90 psi
3,000 gal Glascote, 50 &FV/ 90 psi
3000 gal Pfaudler, 75/90 psi
2,000 gal Pfaudler, 75/90 psi
1,000 Gal. Pfaudler, 100&FV/90 psi, 4RW
1,000 Gal. Pfaudler, RA60 Series, 100& FV/90 psi, 4OW
1,000 Gal. Pfaudler, RA60 Series, 100& FV/90 psi, 4TW
800 Gal. SS clad, 60/60 psi
750 gal. DeDietrick, Phila drive
500 Gal. Pfaudler, 100&FV/85 psi, BH drive

Stainless Steel
4,000 Gal. 316SS, Atmos./50 psi, withcoils
3,000 Gal. 347SS Blaw Knox, 150/50 psi
2,500 Gal. 315L SS, 75/75 psi, 150 psi Int. coils
2000 Gal. Nooter Autoclave, 318L 2000 psi, FV int. coils
2,000 Gal. Duesenberg, 310 SS,15/35 & FV Int., 50 psi jkt.
1,750 Gal. 316SS Nolfa, 1487/50 psi
1,500 Gal. 304SS, 10 HP Lightnin
1,500 Gal. 304 SS, 100/30 psi
1,000 Gal. 304SS, 250/80 psi
1,000 Gal. 316SS, 50/75 psi jkt
1,000 Gal. 318 SS, 15 & FV/50, 10 HP
1,000 Gal. 318 SS, 100/30 10 HP
750 Gal. 316SS, 75 & FV/50 psi
750 Gal. 304SS, 50/80 psi
600 Gal. 316SS, 3000psi, 10 HP
600 Gal. SS, 50 psi, 1.5 HP XP
500 Gal. 316SS, 55 & FV/55 psi
100 Gal. 316SS, 16/50 psi
100 Gal. 318ELC SS, 500/90 psi

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4-DRAIS SAND MILLS, TYPE PM-80-STS-DDA. MANUFACTURED 1964-85. PRICED TO SELL • CALL FOR DETAILS

MIXERS

4.5 Gal. Kneader Master Cont., SS w/jkt.
5 Gal. AMK 304SS Jcktd. Kneader Extruder
15 Gal. W.C. Readco Sigma Blade Dbl. arm
25 gal. Readco DBL/Arm Sigma Blade jktd. SS construction 15 H.P.
80 Gal. Hockmeyer Pony, SS contacts, 7.5 HP varispeed
100 Gal., SS, Sigma Blade, Jckld. 40 HP
200 gal. W-P CS dble arm Sigma blade, 20 HP
250 gal. AMK Kneader Extrudar, Sigma Blades, CS construc, 40 psig,trough jkt.
500 liter Welex hi intensity, SS contact parts
500 Gal. S-W Rubber Cement, CS, 2-10 HP motors (2)
Unused 1000 Gal. Sanitary 316SS B-K Dbl. Motion Change Con; 100&FV/165 PSI, 125HP.
Littleford Model FKM-6000, SS
Littleford Model FKM-600S, SS
Littleford Model FKM-2000, SS, w/choppers
7 Cu. Ft. 304SS Nauta Model MBX-70
10.8 Cu. Ft. Nauta D-105, C6
Welding Eng. Model 2FV1V2S Twin screw Extruder, SS, Contacts, 150 psi
Koehring mdl. 350, 40 HP
NEW/NEVER USED 75/37.5 HP Hockmeyer Disperser

PLUS LOTS - LOTS MORE

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KETTLES–REACTORS, SS

30,000 gal. 304SS fermentors, 14' x 24', 25 psi/vac., coils, 200 HP agit. (4)
5,000 gal. 304SS, atm. int., 75 psi jkt., agit.
4,100 gal. 304SS kettle, 16 psi jkt., 5 HP agit.
3,500 gal. 316SS kettle, 20 psi jkt., 7½ HP agit. (2)
2,500 gal. 304SS reactor, 75 psi/FV int., 150 psi jkt.
1,500 gal. 304SS kettles, jktd., 5 HP agit. (3)
1,500 gal. Pfaudler 316L SS reactor, FV/150 psi, 0 HP Agit. (2)
1,150 gal. 304SS reactor, 16 psi int., 25 psi jkt., 5 HP agit.
900 gal. 304SS reactor, 75 psi/FV int., 150 psi jkt., agit.
600 gal. 304SS reactor, 300 psi int., 75 psi jkt., coils (3)
500 gal. 304SS reactor, 150 psi int., 150 psi jkt., 5 HP agit.
300 gal. 316SS reactor, 75 psi/FV int., 60 psi jkt.
(50)... 316SS and 304SS reactors and kettles from 6 gallon to 400 gallon... call for list.

BIG PFAUDLER 316SS REACTORS

(3) 15,000 gal. Pfaudler, 316SS, 12'0"x 15', 100 psi, 200 psi jkt. Agit.
(4) 10,000 gal. Pfaudler, 316SS, 11'0"x 12'4", 100 psi, 100 psi. jkt. Agit.

REACTORS–GLASS

2 gal. Pfaudler, 750 psi/FV, 700 psi jkt.
20 gal. Pfaudler, 35 psi, 100 psi jkt., agit. (2)
30 gal. Pfaudler, jktd.
50 gal. Pfaudler, 28 psi, 100 psi jkt.
50 gal. Pfaudler, 100 psi/vac., 85 psi jkt., agit., 1975
100 gal. Pfaudler, 28 psi, 90 psi jkt., agit.
150 gal. Pfaudler, 25 psi/vac., 90 psi jkt., agit.
300 gal. Glascota, 28 psi/vac., 90 psi jkt.
500 gal. Pfaudler, 100 psi/vac., 90 psi jkt., vari-drive agit.
500 gal. DeDietrich, 65 psi/vac., 105 psi jkt., 6 HP agit.
750 gal. Pfaudler, 25 psi, 85 psi jkt., 5 TW agit.
1,000 gal. Pfaudler, 100 psi, 90 psi jkt.
1,000 gal. Pfaudler, 75 psi/vac., 90 psi jkt., 10 HP agit.
1,500 gal. DeDietrich, 100 psi/vac., 90 psi jkt., 1981,
1,500 gal. Pfaudler, 100 psi/vac., 90 psi jkt., 25 HP agit.
2,000 gal. Pfaudler, 100 psi/vac., 90 psi jkt., 15 HP agit.
2,500 gal. Pfaudler, 150 psi, 90 psi jkt., #TWS agit.

NEW LIQUIDATION! CHEMICAL/POLYMER PLANT....ILLINOIS ..BUY BEFORE REMOVAL AND SAVE!!

Bird 32"x 50", centrifuges, 316SS, contour (2)
Welex 8" Extruder, 700 HP, 30:1 L/D (5)
Welex 6" Extruder, 400 HP, 30:1 L/D (2)
Conair 24" pelletizer, 40 HP (2)
Renneberg 5'x 25' 304 SS rot. hot air dryers, 10 HP, (3)
Sweco & Kason 60" screens, SS (2)
K-Tron 7000#/hr. twin screw volumetric feeder, SS, (5)
Pfaudler 1,500 gal. 316L SS reactor, FV/-180 psi' 5 HP agit. (2)
Pfaudler 10,000 gal. 316L SS reactor, 180 psi/FV int., 180 psi jkt., hyd agit (4)
Worth. Plant air comp., 323 CFM @ 125 psi, 75 HP, Model #4-BB-2 (2)
17,000 gal. & 12,000 gal. 316 SS Tanks (3)

PHONE (609) 267-1600

DRYERS

Blaw Knox 6'4"x 40' SS vac. dryer, 600 cu. ft.
Blaw Knox 36"x 20' vac. dryer 316L SS, 72 cu. ft.
Blaw Knox 66"x 36' vac. dryer, nickel
Malhis 24"x48" flaker, chrome plated
Sandvik 48"x24' SS belt flaker, UNUSED
Sargent 60" x 45' SS conveyor dryer
Stokes 6" x 11" drum flaker
Blaw Knox 32" x 90" dbl. drum
Buflovak 42" x 120" dbl. drum, 160 psi
Aeromatic #ST-5 fluid bed dryer, 6/10 NG
Witte 36" x 10' fluid bed, SS, sanit.-cooler
Stokes 36 sq. ft. Lyophilizer freeze-dryer
Renneberg 38" x 20" rotary dryer, 316 SS
Renneberg 5'x 28' 304SS rot. hot air dryers, w/cyclone, etc. (2)
96" x 50' Louisville SS rotary dryer
10' x 100' GATX rot. steam tube dryers, 140 psi (4)
Wyssmont #VTL-24 Turbo-tray dryer, 304SS
P-K 5 cu. ft. vac. dryer, 304SS
P-K 20 cu. ft. vac. dryer, 304L SS (2)
Abbe 30 cu. ft. 304SS vac. dryer
Devine 110 cu. ft. 304 SS vac. dryer
Pfaudler 165 cu. ft. glass-steel vac. dryers (2)
Abbe 326 cu. ft. 316SS vac. dryer
Devine 370 cu. ft. 316SS vac. dryer
Devine 564 sq. ft. vac. shelf dryer
Niro 30" SS spray dryer
Turbulaire 48" x 7' spray dryer
Bowen 72" spray dryer, SS
Bowen 96" spray dryer, SS

FILTERS–VACUUM

36" x 1' Dorr-Oliver, fiber glass 9 sq. ft.
36" x 1' Ametek, 316 SS, 6 sq. ft.
40" x 3' Bird-Young, SS, 48 sq. ft.
4' x 16' Elmco, 316SS, 64 sq. ft., horiz.
5' x 3' Ametek, SS, 55 sq. ft.
6' x 4' Elmco, "Elmcomet" polypropylene, UNUSED
6' x 8' Elmco, SS, 200 sq. ft., precoat
6' x 10' Dorr-Oliver, 250 sq. ft., 316SS, precoat
8' x 12' Elmco, 316SS, precoat, 300 sq. ft., (3)
8' x 14' Dorr-Oliver, 316SS, precoat, 350 sq. ft. (2)
10' x 10' Elmco, 316SS, precoat, 314 sq. ft.
11'6"x 16' Elmco, SS contacts
12' x 14' Komline, 304SS, 625 sq. ft., flexibelt disch. (2)
40' dia. Elmco tilting pan, vac. filter, 316 SS

Dorr-Oliver 8' x 12' precoat rotary vacuum filters, 316SS contacts...Prices Slashed, BIG SAVINGS!

FILTERS–PRESSURE

12 sq. ft. Ametek/Niagara #12, SS
54 sq. ft. Funda, SS, jktd.
65 sq. ft. Artisan "Dynamic" filter/washer, SS (2)
140 sq. ft. Niagara # 36-140 316 SS (2)
600 sq. ft. U.S. Autojet, 316SS, sanit.
1000 sq. ft. U.S. Autojet #1000, 304SS
30" Sperry filter press, 11 cu. ft.
36" Shriver filter press, 546 sq. ft., hydraulic
42" Shriver filter press, 777 sq. ft., hydraulic
48" Shriver ALP recessed filter press, SS, 276 sq. ft.
48" Poly Filter Co. polypropylene filter press, 2094 sq. ft., 67 cu. ft. cake, 1983

PULVERIZERS

Mikro #5MA atomizer, 5 HP
Mikro #6MA atomizer, 66
Mikro #2DH pulv., 6S, 5 HP
Pallman #REF8 pulv., 100 HP
Pallman #PP6 pulv., 50/75 HP
Abbe porcelain pebble mills... 36"x42", 36"x48", 42"x60", 48"x60", 60"x48" (7)
Raymond 50" 5-roller hi-side mill, 1981, UNUSED
Raymond #6056 Hi-side roller mills, dbl. whizzer (2)
Raymond #73612 Hi-side roller mill, dbl. whizzer

NEW LIQUIDATION DRY DETERGENT MFG. EQUIP. ...NORTH JERSEY!

5-Kieissler dust collectors: 2000, 1400, 535 sq. ft.
5-Cleveland 120 cu. ft ribbon blenders, 60 HP
5-60' C/C steel bucket elevators
5-Kieissler bag type dust collectors
2-Box Filling Lines/ 160, 120 Boxes/Min.
1-J.H.Day 200 gal. sigma blade mixer, jktd., 40 HP
2-Moyno Pump # 1L8SSO, 5HP.
2-FMC-Stokes form, fill & seal units
2-Eriez #62B vibratory feeder, SS, 60"x 18"x 24" UNUSED
1-Hesser volumetric powder carton filler.
2-Standard-Knapp case gluers
1-Hercules drum mixer
1-200 gal. SS tank, jkt. & agit.

Over (50) Bird & Sharples decanters

CENTRIFUGES

Sharples P-5400 D-Canter, 316SS, Carbide tiles, late (2)
Sharples P-3400 D-canter, 316SS, tiles (2)
Sharples P-5000 D-canter, 316SS
Sharples P-660 D-canter, 316SS, back drive
Bird 12" x 30", 316SS, Decanter, 20 HP
Bird 16" x 28", 316SS, Decanter (3)
Bird 16" x 42" Decanter, steel, 10/30
Bird 24" x 38" Decanter, 304SS, contour 10
Bird 24" x 38" Decanter, 316SS, contour (3)
Bird 24" x 60" Decanter, steel
Bird 24" x 86" Decanter, SS, 125 HP
Bird 24"x 96" decanter, 304SS, carbide tiles, 1981, UNUSED (3)
Bird 32" x 50" Decanter, Monel, contour (2)
Bird 32" x 50" Decanter, 304SS, contour
DeLaval NX214-318 Decanter, 304SS, 20 HP (2)
Sharples AS16V "Super," SS (5)
Sharples AS26V "Super," SS
DeLaval BRPX-213-30, 316SS separator/desludgers (3)
Westfalia SAMN15037, Desludger/Separator, 316SS
Westfalia SA14-35-078 3-way separator, 316SS
Krupp 10" pusher, 316SS, 10 HP
Baker-Perkins 19" pusher, 304SS, 40 HP
Sharples 46" T-1600 auto-basket, 100 HP
Tolhurst 48" Batchmaster, rubber lined, 30 HP
Sharples 46" Tornado-Matic, SS, 25 HP
Delaval 48" Mark 111, 316SS hyd.
CENTRIFUGE PARTS... Sharples, Bird, DeLaval, etc.

EVAPORATORS

2.4 sq. ft. Rodney-Hunt SS, 3 HP
21 sq. ft. Rodney-Hunt Turbafilm #4, SS
67 sq. ft. Rodney-Hunt, 304 SS, Turbafilm
100 sq. ft. Pfaudler, 316L SS, wiped film
600 sq. ft. Goslin-Birmingham dbl. effect, SS
854 sq. ft. Buflovak dbl. effect, 6S
1688 sq. ft. Roger dbl. effect, SS
Swenson 316SS continuous crystallizer, 9" x 14'

TANKS & VESSELS

30,000 gal., 304SS, 14' x 24', coils, 200 HP agit. (4)
20,000 gal., 304SS, 12' x 24' (2)
17,000 gal., 304SS, 11' x 24' (3
17,000 gal., 316LSS, 14'x 13', Agit. (2)
12,000 gal., 316LSS, 12'x 14', Agit. (5)
10,500 gal., 316L 6S, 8' x 25'
10,400 gal., 304SS, 10'S" x 16', agit.
8,000 gal., 304SS, 10'S" x 12'
5,000 gal., 304SS, 9'x6', 25 HP agit.
3,500 gal., 304SS, 8'x9'
3,000 gal., 304SS, 7' x 10', agit.

MIXERS, BLENDERS

3.5 cu. ft. Henschel #FM160, 17/20 KW
11.8 cu. ft. Henschel #115JSS, 92/46 HP
13.7 cu. ft. Lodige #W600/K1200, mix/cool comb.
20 cu. ft. P-K twin shell S6
35 cu. ft. Day Nauta, #NBX350, SS
52 cu. ft. Nauta 304SS mixer (2)
60 cu. ft. Gemco, TW SH, Sanl, SS
69 cu. ft. Patterson dbl. cone, SS
70 cu. ft. Day Nauta, #N6700, 10 HP
76 cu. ft. Day Nauta, SS, jktd.
76 cu. ft. Robinson SS ribbon blender, jktd.
98 cu. ft. Day Nauta, SS, 1961
110 cu. ft. J.H. Day, dbl. ribbon, 316SS
120 cu. ft. Cleveland ribbon blenders (6)
144 cu. ft. 304SS dbl. ribbon blender, 30 HP
169 cu. ft. Pfaudler, dbl. cone, glass steel jktd., vacuum
200 cu. ft. Young, ribbon, 6S
316 cu. ft. Sprout-Waldron ribbon blender, S8, jktd.

(2) Sharples P3400 D-Canter, 316SS, back drive, little use since rebuilding!

NEW & UNUSED PROCESS EQUIP., 1982, IN ORIGINAL PACKING ... SOUTH CAROLINA, CALL! Phone (609) 267-1600

SALERS, Olapozapak #D800 balers, (2)
BAG PACKER, Howe-Richardson #G-S-17 semi-automatic bagging system SS contacts
BINS, 304L SS contacts, 1300 cu.ft./9720 gal.

CENTRIFUGE, Bird 24"x96", 304SS, Model 15 solid bowl continuous, 10 deg. contour bowl, Tungsten carbide tiles on conveyor, 150 HP

CHLORINATION SYSTEM, Wallace & Tiernan
COLUMN, 46" dia. x 15'9", 304SS
CYCLONE, DuCon Model 700/175 304SS high efficiency cyclones, size 210, Type VM (8)

DRYERS, Nooter 4' x 14' rotary vac. dryer, 316L SS shell and jacket, Incoloy ribbon agit, ASME 100 psi/FV int. & jacket. 100 HP

FEEDERS, Acrison gravimetric weigh feeders, Model 403-15,000-3,000-SDF-4, 304SS
FURNACE, C-E Air Co. "Cor-Pak" thermo oxydizers, direct gas fired
MIXER, Air mix blender system, Koppers-Sprout Waldron #38-50, 500 cu.ft., 304SS
MIXERS, Webb, 58" W x 15'L twin shaft paddle mixers or pug mills, 304SS contacts, (2)
PACKAGING SYSTEM, design to fill bags, palletize, shrink wrap, etc. automated system.
PULVERIZERS, Mikro #4TH pulverizers, 125 HP drive, (15)

"ACTION SALE"... POLYMER COMPOUNDING PLANT...CARTERET, N.J. CALL MARC PHAIR @ (609) 267-1600

(2) Munson 300 cu.ft. blenders, 104" dia., #TS-300GS, pkgd.
(1) Munson 110 cu.ft. blender, 90" dia., #700/110, pkgd.
(2) Munson 90 cu.ft. blenders, 80" dia., #7TS90, pkgd.
(2) 400 cu.ft. Gruendler ribbon blenders
(2) 215 cu.ft. Cleveland ribbon blenders
(2) Eirich 10' dia. intensive mix mullers, motorized pan and mullers
(2) Komline dbl. cone blenders; 320 cu.ft. (10' dia.), 69 cu.ft. (6' dia.)
(3) Gruendler hammermills, 150 HP, 1980
(2) Gruendler hammermills, 100 HP, 60 HP
(1) Mikro #8D atomizer pulverizer, 30 HP
(1) Mikro #4TH pulverizer, 50 HP
(2) Saw tooth breakers/crushers
(2) St. Regis baggers
(1) "Push-Pull" railcar unloading system
(25) Flexkleen, Dustex, etc., bag type dust collectors
(2) Box sifters
(1) Handling system w/(2) 2000 lbs. elevators, 80' powered roller conveyor, etc.
ALSO...laboratory with lab apparatus, tables, equipment, etc.; motor control center units; Gardner-Denver air compressor; etc., etc.

Poly Filter Co. 48" polypropylene filter press, (100) chambers, 2094 sq. ft., 87 cu. ft cake, hydraulic...1983, CALL!

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ACCUMULATORS
Standard Metal 48" diameter, stainless steel accumulator.
AIR COMPRESSORS
Ingersoll Rand 25 HP, air cooled, air compressor, 100 CFM, 100 PSI.
ATTRITION MILL
Bauermeister attrition mill, model UT 12, 12" diameter rotor, 15 HP.
ATTRITORS
Union Process attritor, size 1S, ½ gallon, ¾ HP explosion proof.
BOILERS–ELECTRIC
Chromalox 100KW, 341,200 BTU's, water-glycol heat transfer system, 480V.
BOTTLE CLEANERS
Standard Metal Co. model J1600 bottle cleaner.
BUNDLER
Great Lakes bundler, model 500-2, automatic bundler and sleeve wrap.
CAPPERS
C/F Consolidated capper, set for 83 mm, 60 caps per minute
CASE ERECTOR
ABC Form-A-Matic, model S-77, forms and bottom seals. 35-78 cases/minute.
CASE PACKER
Miller Hydro drop caser, model R3KT.
CASE SEALER
ABC Junior top and bottom case sealer, with cold glue.
Elliott model 5200 top only case sealer, pressure glue.
Elliott model 5200 top only case sealer, with pressure glue.
Standard Knapp case sealer, model 462HM, top only, Nordson hot melt.
CENTRIFUGE
Western States 48"x30", perforate, 310 S/S, 50 HP XP hydraulic.
Sharples 30" x 18", 316 S/S, solid bowl, top unload, 25 HP.
Alfa-Laval disc clarifier, 304 S/S, manual unloading, 7½ HP TEFC.
COATING PANS
Thomas Machinery 36" diameter stainless steel, angular coating pan.
COMPRESSION SECTIONS
New Way compression section, model F, 6' long.
CONVEYORS–SCREW
Screw Conveyor, stainless steel, 7" dia. x 136" long, 8" pitch, ½ HP.
S/S unload station w/7" dia. vert. screw conveyor, discharge 132" H.
DISPERSER
NEW Schold Disperser, model VHS 400, 20 HP explosion proof.
Hockmeyer model M, 10 HP XP VS disperser, with tub holder.
UNUSED Hockmeyer 200/100 HP XP, tank mount, high speed disperser, 460V.
UNUSED Hockmeyer 200/100 HP XP, tank mount, high speed disperser, 460 V.
DRYER
Buflovak double drum dryer, 0" dia. x 7" long chrome plated rolls
DUST COLLECTORS
Carter-Day dust collector, 170 sq. ft., 1,800 CFM, 7½ HP motor.
EXTRUDER
Prodex extruder, 3½", 21:1, 5 zone, 40 HP variable speed.
FADE-OMETER
Atlas Electric Devices Fade-Ometer, model 18-FT
FILLERS–BAG
Stoker model CR bag packer, 3" dia. x 11" long spout, 20-250 lbs. cap.
Stoker model CR bag packer, 3" dia. x 11" long spout, 20-250 lbs. cap.
Stoker model 15VR bag packer, 3" dia. x 8" long spout, 20-250 lbs. cap.
Stoker model 15VR bag packer, 3" dia. x 9" long spout, 20-250 lbs. cap.
FILLER–PAINT
Ambrose filler, model PF-9
Elgin Double H paint filler with lid embosser.
FILLER–PISTON
Anderson model 340-4, S/S, 32 oz. piston, cup filler with plug capper.
Elgin Single Piston Filler, nickel, 132 oz. cylinder, no conveyor.
Elgin Twin Piston Filler, stainless steel, 2-70 oz. pistons
Elgin Twin Piston Filler, stainless steel, 2-78 oz. cylinders
FILLER–POWDER
Parsons model C, 10 head filler, 7-14 oz. fill.
S.F. Gump Edtbauer-Duplex net weigh, size 3, semi-automatic.
Parsons Model C, 0 head, 7-14 oz. filler
FILLERS–TUBE
Kalix KX-60 metal tube filler, S/S, agitated hopper, 2 to 183 cc fill.
GEAR REDUCERS
20 HP exp. proof, 125 RPM output, class 3, horizontal parallel shaft.
20-10 HP XP, horizontal, parallel shaft gearhead, 280-140 output RPM.
7½ HP XP, horizontal, parallel shaft gearhead, 25 output RPM.
GRANULATOR–OSCILLATING
Cherry Burrell Model 542, S/S oscillating granulator.
Cherry Burrell Model 542, S/S oscillating granulator.
Cherry Burrell Model 542, S/S oscillating granulator.
Cherry Burrell Model 542, S/S oscillating granulator.
Cherry Burrell Model 542, S/S oscillating granulator.
Cherry Burrell Model 542, S/S oscillating granulator.
Stokes oscillating granulator, model 43A, carbon steel construction.
Stokes oscillating granulator, model 43A, carbon steel construction.
GLUER
Owens Illinois inner seal gluer, for jars and bottles.
Owens Illinois inner seal gluer, for jars and bottles.
HOMOGENIZERS
Manton-Gaulin homogenizer, 2,500 GPH @ 3,000 PSI, 75 HP.
HOT OIL UNITS
Sterlco 12 KW hot oil unit, 440 volts.
KETTLES–MIXING
Hamilton 280 gallon S/S kettle, double motion, 2 HP VS, 45 PSI jacket.
Groen 150 gallon S/S kettle, jacketed, 1½ HP TA agitation.
LABELERS–AUTOMATIC GLUE
Burt roll through labeler, model AU 404.
LABELER–PRESSURE SENSITIVE
Fasson model M-11-R pressure sensitive labeler, 5" max web width.
Fasson model M-11-R pressure sensitive labeler, 5" max. web width.
LABELER–SEMI-AUTOMATIC
Labelette model 1418 labeler, hot melt, ½ pint to 1 gal. w/ears.
LID DROPPERS & CLOSERS
Elgin model S lid dropper and closer, ¾ HP.
MILLS–COLLOID
Patterson Ind. Tri-Homo colloid mill, 316 S/S, size 18, 40 HP.
Tri Homo Corp. colloid mill, 316 S/S, Size: 10, 40 HP.
Premier 316 S/S colloid mill, 18" dia., model KSH, 40 HP.
Morehouse 8-1400 stone mill, 20 HP explosion proof.
Tri-Homo 5" colloid mill, stainless steel, 5 HP explosion proof.
MILL–HAMMER
Micro Pulverizer model 3TH, stirrup swing hammers, 30 HP.
Mikro Pulverizer model 1SH, stainless steel, stirrup swing hammers, 5HP.
MILLS–KADY
Kady mill model 2 8H, 108 gallon batch, 40 HP explosion proof.
MILLS–PEBBLE
Patterson 6'x5' pebble mill, 504 gallon batch, 25 HP explosion proof
J.R. Alsing Engineering 3'x4' pebble mill, 92 gal. batch, 3 HP XP.
Norton pebble mill, 38"x42", 126 gallon batch, 5 HP explosion proof
Paul O. Abbe 30" dia x 36"L, pebble mill, 45 gal. batch, 2HP TEFC.
Paul O. Abbe 2½' x 3½' pebble mill, 45 gal. batch, 10 HP XP.
Steveco 20"x20" pebble mill, 18.5 gallon batch, high stands, 2 HP
U.S. Stoneware 27 gal pebble mill, frame and reducer only.
Used Paul O. Abbe pebble mill, 7 gallon total, with ½ HP drive.
Paul O. Abbe 18"x24" pebble mill, 12.5 gallon batch, 1 HP.
Stevco 32"x36" pebble mill, 75 gallon batch, high stands, 5 HP XP.
MILLS–THREE ROLL
J.H. Day 16"x40" three roll mill, 20 HP explosion proof.
Kent 4"x8" three roll mill, ¾ HP explosion proof.
Kent 4"x8" three roll mill, ¾ HP explosion proof.
MILLS–TWO ROLL
Thropp 6"x12" two roll mill, 7½ HP.
MILLS–SAND & SHOT
Chicago Boiler sand mill, model 18P.
Chicago Boiler sand mill, model 3 gallon standard.
Premier 18 gallon closed head media mill, 50 HP explosion proof dr
Morehouse-Cowles sand mill, model 12-30, closed head, 40 HP XP
MILLS–STEEL BALL
Epworth 4'x5' steel ball mill, 320 gallon batch, 20 HP XP.
Epworth 4'x5' steel ball mill, 320 gallon batch, 20 HP XP.
Patterson 2½'x3' steel ball mill, 74 gallon batch, 7½ HP XP.
Patterson 2½'x3' steel ball mill, 74 gallon batch, 7½ HP XP.
Patterson 2½'x3' steel ball mill, 74 gallon batch, 7½ HP XP.
Patterson 2½'x3' steel ball mill, 74 gallon batch, 5 HP XP.
MIXERS–BAKERY
Hobart 20 quart mixer, model A200, ⅓ HP 3 speed.
Hobart 80 quart mixer, model M-802, 3 HP XP, 4 speed, tall pedest
Hobart 80 quart mixer, model M-802, 3 HP XP, 4 speed, tall pedest
MIXER–DOUBLE ARM
Readco 18 gal. 316 stainless steel double arm mixer, 7½ HP XP.
MIXERS–DOUBLE RIBBON
Falcon 39 cu. ft., S/S, double, ribbon blender, jacketed, 7½ HP XP.
Readco 10 cu. ft. S/S double ribbon blender, 3 HP.
MIXERS–PADDLE
Paddle Blender, 113 cu. ft., carbon steel, 15 HP.
MIXERS–PONY
Kent 00 gallon pony mixer, 7½ HP XP, planetary action, 4 tubs.
MIXERS–STATIONARY
Patterson Unipower, 10 HP TEFC, 39 RPM.
Patterson Unipower, 7½ HP TEFC, 28 RPM.
MIXERS–TWIN SHELL
Patterson-Kelley twin shell blender, S/S, 1 cu. ft., L/S bar, UNUSED
Patterson-Kelley twin shell blender, S/S, 1 cu. ft., 550 lbs/cu. ft., XP
OVENS–GAS
Grieve gas oven, max. temp. 850 deg. F, interior 38"W x 26"H x 20"D.
OVENS–ELECTRIC
Blue M 24" x 24" x 48" interior, 316 deg. C
Blue M 25"W x 38"H x 26"D S/S interior, 650 deg. F.
Despatch 37¼"W x 37¼"H x 25"D interior, 650 deg. F.
PUMPS–CENTRIFUGAL, S/S
Trench & Marine 2" x 1¼" S/S centrifugal pump, 1HP TEFC VS.
PUMPS–POSITIVE DISPLACEMENT
Viking 3", model LL4124R, pressure relief valve, 3 HP explosion proof.
Viking 2", model K74288, pressure relief, 5 HP explosion proof.
PUMPS–VACUUM
Stokes model 612G MICROVAC vacuum pump, 500 CFM, 25 HP.
REACTOR–STAINLESS STEEL
316 S/S reactor, 300 gal., 14.7/14.7 PSI, 3 HP explosion proof.
Patterson Foundry 50 gallon, 316 S/S reactor, 100/30 PSI, 2 HP.
Expert 75 gallon, 304 stainless steel reactor, 275/15 PSI, 3 HP XP VS.
Expert 75 gallon, 304 stainless steel reactor, 275/15 PSI, 3 HP XP VS.
SIFTERS/SEPARATORS
Gump 31 SS/S pressure sifter, model CP-32, 30" dia., ¼ HP, sanitary.
Swaco 60" dia. C/S, single deck, open top, 2½ HP.
TANKS–CARBON STEEL, MIXING
Imperial 1,000 gallon carbon steel mixing tank with 5 HP XP 46 RPM drive.
Imperial 1,000 gallon carbon steel mixing tank with 5 HP XP 45 RPM drive.
Patterson 850 gallon carbon steel mixing tank with 5 HP XP 300 RPM drive.
TANKS–JACKETED
Groen 430 gallon, 304 S/S tank, 15 PSI jacket.
Hooter Mfg. Co. 160 gallon 304 S/S tank, jacketed, ¾ HP.
United Utensils 100 gal., 316 S/S tank, 150 PSI jacket.
TANKS–STAINLESS ST., MIXING
6,000 gallon S/S mixing tank, closed top, cone bottom, ¾ HP 5.75 RPM.
TANKS–STAINLESS ST. STORAGE
Cherry-Burrell S/S, 8,000 gal., horizontal storage tank, 8' dia. x 19'1.
Alloy Fabricators 7,500 gal., 316 S/S, 10' dia. x 12'6" deep.
UNSCRAMBLER
Hortham Conveyor 8 lane unscrambler, 29" wide.
WEATHER–OMETER
Atlas Weather-Ometer model XW-WR, auto humidity, chart recorder, chiller.
Atlas Weather-Ometer model XW-R, auto humidity control, chart recorder.
MISCELLANEOUS
Schmutz Mfg. Co., Inc. top grain offset printer, model CM24, 24" wide.

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4 x 40' Bartlett-Snow Rotary Kiln
3 x 20' Bartlett-Snow Rotary Kiln
3 x 20' Bartlett-Snow Rotary Dryer
M-400 (16") Bird Pusher Centrifuge, 316 S/S (2)
18" Bird Horizontal Screen Bowl Centrifuge, 316 S/S
12" x 15' Jeffrey Fluid Bed Dryer, S/S
60" Wide Proctor & Schwartz Belt Dryer
Marley Cooling Tower
Multi-Stage Evaporator System

USED EQUIPMENT

9.5' x 250' Traylor Rotary Kilns (8)
8.3' x 43' Traylor Rotary Coolers (6)
6 x 40' Allis-Chalmers Rotary Coolers (6)
8 x 16' Traylor Ball Mills, 450 H.P. (4)
Belt Conveyor-up to 54" wide, up to 500' long
10" x 24" Allis-Chalmers Jaw Crusher
Size 322 Allis-Chalmers Hydro-Cone Crusher
250 TPH Pennsylvania Hammermills (4)
9 x 30' Chattanooga Paddle Mixer (2)
8 x 12' Chattanooga Paddle Mixer (2)
Misc. Pumps, Compressors, Screens, Tanks, Dust Collectors, Feeders and Conveyors.

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BLENDER–.11 cu. ft. Littleford Model M-5-O, S.S.
BLENDER–200 cu. ft. Patterson-Kelley Twin Shell, C/S
CENTRIFUGE–48"x30" Western States, Perf, S.S316
CENTRIFUGE–AS-16NF Sharples, 3NP, 15,000 RPM
CHILLER–150 ton Carrier, 19C607-5-3 Hermetic
COMPRESSOR–400 CFM @ 100 PSI Fuller C-80-80H, 100HP
COMPRESSOR–600 CFM @ 125 PSI Clark ICA-6, 150HP
CONDENSOR–165 sq. ft. Karbate, 75/75 PSI
CONDENSOR–278 sq. ft. 304 S.S. 175/175 PSI UNUSED (2)
CONDENSOR–398 sq. ft. 304 S.S. 150/150 PSI UNUSED (4)
CONDENSOR–1636 sq. ft. 316 S.S. 150/150 PSI (3)
DRYER–5 cu. ft. Patterson-Kelley Conical S.S.
DRYER–20 cu. ft. Economy Conical C/S
EVAPORATOR–1 sq. ft. Rodney Hunt 316 S.S. w/Condenser
EVAPORATOR–6.5 sq. ft. Rodney Hunt, 316 SS System
FILTER–5'6"x8' Bird-Young 304ELC, Rot Vac
FILTER–7"-30" Shriver & Sperry units
KETTLE–50 gal. Mueller S.S. with Double Motion Agit.
MILL–SH, 2TH, 4TH Mikro Pulverizers
PROCESSOR–5-10 cu. ft. P.K. V-Type S.S. Jkt. Vac. 550# (4)
REACTOR–750 gal. glass lined Pfaudler 100 FV/90 (2)
REACTOR–2000 gal. C/S & S.S. 15/15 PSI (2)
TANK–4000 gal. Vertical 304 S.S. 25 PSI UNUSED (2)
TANK–9500 gal. Horizontal S.S. on saddles
VACUUM PUMP–150 CFM @ 26" Nash H-6, 25 HP rebuilt
VACUUM PUMP–1550 CFM @ 24" Nash H-10, 125 HP

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-Readco 5 gal. SS jktd. vac. mixer 8 HP
-Ross 18 gal. Planetary Mixer SS
-Baker Perkins 308 gal. Sigma Blade jktd. vac. mixer
-Readco 3 gal. SS Sigma mixer, jktd.
-Patterson Kelly 1500 cu. ft. CS blender 75 HP
-Paul O. Abbe 90 cu.ft. SS/sanit. jktd. vac. blender 50HP
-Nauta Mixer 78 cu.ft. SS 18 HP (2)
-Devine 188 cu. ft. Dble Cone Blender, C/S
-Baker Perkins 150 gal. C/S jktd vac. flusher

BLENDER—RIBBON

-Abbe 48 cu. ft. SS clad ribbon blender
-Strong-Scott 200 cu.ft. CS ribbon blender
-J.H. Day 48 cu. ft. Ribbon Blender, S/S (3)

FILTERS

-Elmco 4x12 Belt Filter
-Sparkler Filter Mdl #18-D-4 SS jkt./33012/SS 6-8
-U.S. Autojet filter SS 88 sq. ft.
-Herculex Filter 500 sq.ft. 310 SS
-Bird (Pannevis) Filter SS, 12" wide x 17' long
-Sperry 42" Plypro Filter Press 48 Chambers
-Shriver 36" ALP 316-SS, 41,40 Chambers (2)
-Evirex SS Rotary filters 8 x 8

FILTERS—PRESSURE LEAF

-758 sq.ft. U.S. Autojet, Mdl #780, 316 SS
-Pronto Filter SS 30" Dia, 450 psi
-Industrial Filter 100 sq.ft. Type 122 ID 31 Model OMD
-Enzinger leaf filter S0 360 sq. ft.

DRYERS

-Strong Scott Rotary Vac. Dryer SS 3'x12' Solidaire
-Aeromatic Fluid Bed Dryer Lab. Model #ST-15
-Fitzpatrick Fluid Bed Dryer SS Lab Model #78
-Jeffrey Fluid Bed Dryers 2'x28' SS - (2) Available
-Pfaudler Conical vac. dryer G/L 79 cu. ft. complete system
-D & W Rotary vac. dryer, 316 SS, 2'x 7'
-Gemco SS 1 cu. ft. dble. cone vac. dryer
-Patterson-Kelly 3 cu.ft. twin shell vac dryer SS
-Stokes vac shelf dryers 48.9 sq.ft. (7)
-Pfaudler 9.6 cu.ft. G/L dbl. cone vac. dryer
-Standard Hersey 4'x30' Rotary dryer SS
-Bowen Spray Dryers 7½' & 5' SS
-Aeromatic fluid bed S.S. dryer Model 100ST 20
-Patterson-Kelley 8 cu.ft. SS Conical Vac Dryer
-Stokes 8'x38' Rotary Vac Dryer, Jktd. SS
-Gemco dbl. cone vac dryer 10 cu. ft. SS
-Patterson Kelley Twin Shell vac. dryer 78 cu. ft.

NEW ARRIVALS

-Chemetron Head Exchanger Scrape Wall 8 sq. ft.
-Tolhurst Centrifuge 26" 316 SS perf. basket
-Star SS Filter Presses 18" (6)
-Sharples Centrifuge 12" SS solid bowl w/skimmer (2)
-Cowles dissolver
-Shot Mix 304 SS jkt'd. 100 HP (2)
-Chromalox Hot Oil Heaters 20 & 48 KW complete system UNUSED
-Patterson Kelly 30 cu. ft. twin shell blender jktd SS w/int. bar
-Patterson 3'x4' jkt. Ball-Mill
-Pk 1 cu. ft. Twin Shell SS 508 lb. Cone.
-Meteer Filter Model No. 33A Auger Type, SS/sanit
-Patterson Kelly 48 cu. ft. Twin Shell Blender SS with Liquid/Solid Bar
-150 cu. ft. Double Cone Blender
-Patterson Kelley Twin Shell 1 cu. ft. vac. processor SS
-Alpine Selve Model # A-32-100 LS
-300 gal. SS Dispersion Tank (50)
-Reitz disintegrator SS 6 H.P. 868 R.P.M.
-Autoclave 200 gal. SS 116/350
-Funda Filter 4' dia., SS, jktd. w/20 HP Drive
-SS Kettles 400, 300, 200, 150 (20)
-Artisan 1 sq. ft wiped film evaporator SS complete system
-Ross 18 gal. SS jktd. mixtruder 7½ HP Mdl. AMK 10
-Micro Atomizer SS 5HP XP Mdl. # 5MA
-7500 gal. Fiber Glass Tank (6)

CENTRIFUGES

-Bird Centrifuge CS 40" x 60" Solid Bowl w/drive
-Bird Centrifuge CS 18"x28" Contour Bowl (UNUSED)
-Bird 36"x50" 347SS Contour Bowl
-Sharples 12" SS Lab Model/Brighton Lab
-Sharples P-5000 decanter SS 100 HP

GRINDERS & MILLS

-Ross 3-roll mill 4½ x 10" (2)
-Fitzmill Mdl. No. D-6/DSAO/12 30HP SS
-Simpson Mueller 8"x8" size 2 VD mixer 28 HP
-Sweco Separator 48" 30" 24" 10" SS
-Greerco Colloid Mill, 3 HP & 5HP

REACTORS

-4000 gal. 316 SS reactor 90/500P psi (4)
-Pfaudler 2000 gal. jktd reactor 150 psi/75 psi
-Norwalk 3000 & 750 gal. SS reactor dimple jktd FV/68
-Pfaudler 9200 gal G/L Reactor 90/90 psi Unused
-Downington 1500 gal. Monel Clad reactor psi
-15,500 gal. 304 SS dim., jktd, reactor, 50/100 psi
-Pfaudler 500 gal. G/L jktd. vac. reactor

J. Little Mercer Co., Inc.

254 Hornbine Rd., Rehoboth, MA 02769 617-679-1901

CMR MARKETPLACE

CHEMICAL MARKETING REPORTER'S CLASSIFIED ADVERTISING SECTION

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Chemical Business For Sale–Midwest–Established. Two main product lines. VEry profitable on less than $1.MM annual sales. Business could be purchased with or without chemical plant. Write or call: BOC, P.O. Box 901, Midlothian, VA 23113 (804) 272-2693.

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Chem/Mart Corp. will buy all of your surplus or off spec chemicals, plastics, pharmaceuticals and resins. Current bargain offerings: 22M lbs. Pentaerythritol Tetrastearate; Der 667 Resin, 40 dr. Ethomeen T-30; 19M lbs. Kraton 04141; Calcium Acetate, U.S.P. and Gallic Acid. Prompt efficient Nationwide service. Chem/Mart Corporation, 840 N LaSalle St Chicago, IL 60610. (312) 787-8800.

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Active Buyer of surplus chemicals, pigments, dyes, resins, waxes, plastics etc. Call toll free 1-800-631-3337 or 617-029-8738 Deer Polymer Corp. Chemical Div. 17 Industrial Drive, Holden, MA 01520.

All Surplus — Chemicals — Resins — Oils — Colors Solvents — Plasticizers — Specialties — Intermediates — bought by: Rembach Chemical Co., Inc. 52 Vesey Street, PO Box 5187, Newark, NJ 07105. Phone: (201) 589-7774.

Cash For your surplus chemicals, resins, colors, pharmaceuticals, dyes, other raw materials, by products, wastes, residues and off-spec materials. Morgan Chemicals Inc., 5500 Main Street, Williamsville, NY 04221 (718) 832-4000; Telex 919133.

Realize Top Value from the sale of your surplus Chemicals. We buy surplus Chemicals, Plastics, Resins, Waxes, etc. Bonmar Chemical Co., P.O. Box 494, Fair Lawn, NJ 07410. Phone: (201) 791-2448; Telex: 13-0434.

Resyn Corp. will buy your surplus chemicals, resins and resin raw materials — prime or off-specification. Resyn Corp P.O. Box 63, 1540 W. Blancke St., Linden, NJ 07036. (201) 862-8787.

Surplus Chemicals: Wanted, high prices paid-for-surplus chemicals, resins, pharmaceuticals, colors, plasticizers, solvents, waxes, etc. Prompt and efficient service. Try us for better prices Chemsales Inc., 107-27 180th Street, Jamaica, N.Y. 11433 (718) 658-0400-01.

Surplus Wanted: Chemicals, pharmaceuticals, dyes, solvents, pigments, waxes , other raw materials. Over 55 years service Chemical Service Div., P.O. Box 848. 87-05 Ongley St., Rockville Centre, NY 11571. (516) 536-5533.

We Buy Surplus chemicals, colors, resins, solvents, plasticizers by-products, etc. Over 50 years of service to industry. Eastern Color & Chemical Co., Inc. 65 Roosevelt Ave., Dept. C P O. Box 1029, Valley Stream, N.Y. 11582. (516) 791-4445

EQUIPMENT OFFERED

150 Gal. Glass lined reactor, Pfaudler s.s. jacketed vessels, 100-500 gallons. Duriron 3x1½-5HP. pump 500-8000 gallon s.s. tanks. Gaulin hi pressure pumps. Lester Kehoe Machinery Corporation, 2681 Richmond Terrace, Staten Island, NY 10303, (718) 447-3410, TELEX: DRURY 423496.

Dismantler has used process equipment for sale: Columns, exchangers, heaters, reactors, pressure vessels, tanks, etc Midwest Steel Co., Inc., 8625 Moers Road Houston, Texas 77075. 713/991-7843.

For sale: Boyce Mfg. Chain legs-various sizes, 21' to 84' high, single and double row; legs in excellent condition. Also, various 5.5 sgreeled tanks and s.s. cyclones. Prices loaded. Contact: Equipment Removal & Search, Inc. at (217) 428-9800; P.O. Box 1185, Decatur, Illinois 62526.

Process Equipment for sale: Baker-Perkins Ter-Meer centrifuge 316ss, 5/ton/hour capacity with hydraulic push for unloading. Aeromatic fluid bed dryer 316SS, 200 Kg/hours capacity. Baltimore air coil cooling tower 125 ton capacity. All equipment is in excellent working condition. Equipment is being sold below used equipment cost. Call 818-767-2038

EQUIPMENT OFFERED

Ribbon Blenders for sale. Many sizes in stock. Remanufactured and guaranteed. All sizes available. Stainless Steel and Steel construction. We quote. Tom Williams Co. 9503 Fremont, Kansas City, Mo. 64134, 816-761-6481.

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CHEMICAL IMPORTS

Continued on Page 57

TRIPHENYL PHOSPHATE Monsanto 1280 bgs (73,645 lbs) (Atlantic Conveyor) Liverpool, 9/29.

U-Z

UREA HYDROGEN PEROXIDE Autotype 1 cs (1087 lbs) (Atlantic Concert) Liverpool, 10/06

VITAMIN D2 Rohm Tech 1 dms (0 lbs) (Kazimierz Pulaski) Rotterdam, 10/07.

VITAMIN B2 M Ourza Custom Brokers 20 dms (1499 lbs) (Bing He) Shanghai, 10/05.

VITAMIN B6 Daniel F Young 40 dms (2,557 lbs) (Bing He) Shanghai, 10/05.

WOOL GREASE Joseph H Lowenstein & Sons 74 dms (33,461 lbs) (California Star) Felixstowe, 9/28.

YEAST Nestle 538 pcl (36,836 lbs) (California Star) Le Havre, 9/28.

300 dms (33,864 lbs) (Stefan Starzynski) Le Havre, 9/28.

400 dms (44,888 lbs) (Ever Living) Le Havre, 10/05.

YERBA MATE Samuel Diaz Pumara 6 cs (254 lbs) (American Lancer) Buenos Aires, 10/09.

ZANZIBAR CLOVES CG3 Morris J Golombeck 198 bgs (23,001 lbs) (Oriental Minister) Singapore, 9/30.

Ozone Depletion

Continued from Page 7

tion. Serious ozone depletion would result in a higher incidence of skin cancer among humans and have an adverse impact on plants and marine organisms, scientists say.

Interest in changes in the ozone level has intensified in recent months following the discovery of the ozone "hole" over Antartica, suggesting that atmospheric ozone destruction may be more severe than previously recognized.

Some researchers have suggested that the ozone depletion is due primarily due to man-made chemical pollutants, such as chlorofluorocarbons.

Mr. Callis says his analysis of satellite observations indicates increases of up to 75 percent in nitrogen dioxide in the stratosphere between 1979 and 1984.

The nitrogen dioxide was formed by solar energy, and led to the formation of other nitrogen compounds known to promote ozone destruction, Mr. Callis explains.

Although the cause of ozone depletion has not been conclusively pinpointed, the major US producers of chlorofluorocarbons recently said they would support, if necessary, a global limit on the future rate of growth of CFC production capacity.

PERFUMES & FLAVORS

Continued from Page 47

same basis. Imports reportedly remained steady, however, and industry sources cite several influences behind the increase.

The primary influence, according to an essential oils broker, is the growing buying interest in China and Japan. "The Japanese are importing more and more ocotea cymbarum oil for heliotropine production," he says, "and this affects the prices the Brazilians offer the US."

China is the major competition with Brazil on the international market, yet it imports the Brazilian material, like Japan, for heliotropine production. "The Chinese have been importing the ocotea," says another broker, "in steadily increasing amounts."

Heliotropine imports to the US were 312,348 pounds in 1985 and are on track to match that figure with 231,600 pounds imported from January through September, 1986. The price has held steady despite the indication that production will be stepped up: $9 per pound is an average spot quote.

Another factor helping to firm the Brazilian ocotea's pricing is the steady decline of Chinese ocotea imported to the US over the past few years. In 1983 36 metric tons of ocotea cymbarum oil were brought in to the US, in 1984 13 metric tons, and in 1985 less than 2 metric tons were imported.

The Brazilian ocotea cymbarum with a minimum 84 percent safrole has been absorbing the US market left behind by the Chinese material. The Chinese ocotea, 90 percent safrole minimum, is reportedly used in fewer applications than the Brazilian, thus assisting its decline on the US market.

SEEDS AND SPICES

ANISE SEED — Spot prices for anise seed from Turkey have been steadily rising for the past three months. An average quote for Turkish recleaned anise seed on August 1, 1988 was 80c. to 85c. per pound. Last week the spot price increased 8c. to $1.08 per pound.

Sources relate a limited 1986 crop as being behind the market tightness and indicate that supply problems from origin could continue. One industry source claims Turkey's current problems are linked to the small amounts of material capable of passing FDA regulations instituted last May.

Anise seed imports from January through July, 1986 were down almost 20 percent from the same period in 1985, reflecting the Turkish scarcity. Imports through July of this year totalled 949,431 pounds, last year: 1,180,093 pounds.

Spanish anise seed spot prices followed the Turkish advances. Spanish anise is priced at $1.10 per pound to $1.13 per pound, higher than the Turkish seed because it has been a traditionally smaller crop. Spot prices as of August 1, 1988 for Spanish anise seed were 90c. to 95c. per pound.

FENNEL SEED — Indian fennel seed prices jumped 6c. per pound last week to 88c. per pound and 95c. per pound for recleaned. Increases were reportedly due to a smaller than expected Indian harvest and greater scrutiny of fennel seed imports by FDA.

"At the end of the year," says a spice broker, "fennel imports have contained admixtures, such as stems and leaves. The FDA is trying to guarantee a more uniform import." The result is to put pressure on the importers and shippers who stand to lose out if the fennel isn't up to specifications.

"There's less recleaning work at this end," says a spice importer, "but it puts the shippers at risk." The firming is due to less availability, he adds, and to buyers paying more to ensure that their products won't encounter any problems.

CHEMICAL PROFILE

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Union Carbide, Texas City, Tex. (E, c)	195
Union Texas, Geismar, La., (E, c)	35
Unocal, Beaumont, Tex., (R, c)	65
USX (USS Chemicals, Houston, Tex. (R, p)	164
USX (Marathon Oil), Detroit, Mich. (R, c)	128
USS (Marathon Oil), Garyville, La. (R, c)	110
USX (Marathon Oil), Texas City, Tex. (R, c)	134
Vista, Lake Charles, La. (R, c)	25
Total	21,579

*Millions of pounds per year for chemical use; E, from ethylene units; R, from refinery operations; r, refinery grade; c, chemical grade; p, polymer grade. Actual propylene yield varies widely depending on feedstock and operating conditions. Most capacities listed represent maximum output, and may be overstated. Over 400-million pounds of propylene capacity was closed at Du Pont's Chocolate Bayou plant last year. Hill Petroleum bought Charter's assets in March, 1986. Enron Chemical has been purchased by National Distillers. The deal will be completed shortly. Enterprise will boost its Mont Belvieu propylene capacity to 650-million pounds by January 1, 1987. Exxon dedicated a propylene concentrator at Baytown in September 1986 that boosted capacity there by 400-million-pounds-per-year of polymer grade material. Shell's Deer Park capacity includes a unit that's been idled since 1981. Texaco has an idled olefins plant at Port Neches, Tex. Carbide closed its Penuelas, P.R. operation early last year. USX is spinning off most of its chemical operations to form Aristech Chemical Corporation. The new firm will be formed later this year. Union Texas is partly owned by Allied-Signal, Borg-Warner and BASF. Texas City Refining is owned by Agway and Southern States Cooperative. Profile last published 10/10/83; this revision, 11/3/86.

DEMAND

1985: 14.7 billion pounds; 1986: 15.1 billion pounds; 1990: 17 billion pounds.

GROWTH

Historical (1976-1985): 2.7 percent per year; future: 3 percent per year through 1990.

PRICE

Historical (1974-1986): High, polymer grade, 26 cents per pound, f.o.b. Gulf Coast; chemical grade, 24 cents per pound, same basis. Low, polymer grade, 3.33 cents per pound, f.o.b. Gulf Coast; chemical grade, 6.75c. per pound, same basis. Current: polymer grade, 10c. to 10½c. per pound, f.o.b. Gulf Coast; chemical grade, 9½c. per pound, same basis.

USES

Polypropylene, 36 percent; acrylonitrile; 16 percent; propylene oxide, 11 percent; cumene, 8 percent; isopropanol, 6 percent; oligimers, 6 percent; acrylic acid, 3 percent; export, 1 percent; other, 5 percent.

STRENGTH

Polypropylene is growing at a double digit rate in 1986. Demand is also strong for propylene oxide, cumene, isopropanol, and the oxo-alcohols. Propylene tightness in Europe has led to a large surge in US exports to the continent.

WEAKNESS

The collapse in crude oil prices earlier this year, coupled with propylene oversupply, has led to a sharp decline in propylene prices. Chemical grade propylene prices have fallen from 16 cents per pound in January to 9½ cents at present. Poor pricing in the acrylonitrile export market has also held propylene pricing down.

OUTLOOK

Polypropylene will remain in very strong demand around the world, but its absolute growth will be constrained by supply. Other major end-uses for propylene will track the GNP. US industry, with its large supply of refinery propylene, will be the world's major supply source for propylene and its leading derivatives.

ADVERTISERS' INDEX

CHEMICAL PROFILE

PROPYLENE

NOVEMBER 3, 1986

SUPPLY

PRODUCER	CAPACITY*
Amoco, Chocolate Bayou, Tex. (E, c,p)	600
Amoco, Texas City, Tex. (R, c,p)	500
Amoco, Whiting, Ind. (R, p)	300
Arco, Channelview, Tex. (E, c,p)	1,700
Arco, Houston, Tex. (R, r)	270
Arco, Wilmington, Calif. (R, r)	60
Ashland, Catlettsburg, Ky. (R, r)	500
Champlin, Corpus Christi, Tex. (R, r)	174
Chevron, Cedar Bayou, Tex. (E, p)	635
Chevron, El Segundo, Calif. (R, r)	110
Chevron, Philadelphia, Pa. (R, r)	160
Chevron, Port Arthur, Tex. (E and R, p)	450
Chevron, Richmond, Calif. (R, r)	190
Clark, Blue Island, Ill. (R, r)	70
Clark, Wood River, Ill. (R, r)	65
Cosstsl, Corpus Christi, Tex. (R, r)	55
Coesisl, Westvills, N.J. (R, r)	55
Corpus Christi Petrochemicel, Corpue Christi, Tex. (E, p)	600
Cosden, Bsy Spring, Tex. (R, c)	61
Cosden, Port Arthur, Tex. (R, c,r)	140
Dow, Fresport, Tex. (E, p)	400
Dow, Pisquemine, Ls. (E, p)	700
Du Pont, Chocolete Bayou, Tex. (E, c)	670
Du Pont, Orange, Tex. (E, c)	100
Eastman, Longvisw, Tex. (E, c,p)	600
El Psso, Odessa, Tex. (E, p)	170
Enron, Clinton, Iowa (E, c)	60
Enron, Morris, Ill. (E, p)	200
Enterprise, Mont Belvieu, Tex. (R, p)	530
Exxon, Bston Rouge, Ls. (E and R, r,c)	1,200
Exxon, Baytown, Tex. (E snd R, p,c)	1,200
Exxon, Bsywey, N.J. (R, p)	400
Fins Oil & Chemical, Port Arthur, Tex., (R, c,r)	140
BF Goodrich, Calvert City, Ky. (E, c)	130
Hill Petroleum, Houston, Tex. (R, c)	240
Koch, Corpus Christi, Tex. (R, r)	200
Mobil, Beaumont, Tex. (E, p)	250
Phillips, Sweeny, Tex. (E and R, p)	560
Shell, Desr Perk, Tex. (E and R, r,c)	1,700
Shell, Norco, Ls. (E and R, p,c)	1,400
Shell, Wood River, Ill. (R, r)	250
Southland, Lake Charles, La. (R, p)	240
Standard Oil Chemicsl, Lims, Ohio, (R, c)	400
Sun, Marcus Hook, Pe., (R, p)	460
Sun, Tulsa, Okle., (R, r)	93
Texsco, Delswere City (R, r)	140
Texaco, El Dorado, Kan. (R, r)	55
Texaco, Port Arthur, (E, c)	500
Texas City Refining, Texes City, Tex. (R, c)	120
Union Carbide, Sesdrift, Tex. (E, c)	110
Union Carbide, Taft, La. (E, c)	420

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Vulcan's Chemical

Continued from Paga 9

about 1.8 million to 1.9 million this year, Mr. Bailey said.

The Vulcan official noted that eventually the Senate and House bills will be combined in some kind of compromise, but meanwhile, Federal funding has become only a 20 percent portion of overall highway spending, versus 50 percent in earlier years.

The decline in housing starts will affect mostly multi-family dwellings which use far less construction materials per unit than do single-family houses, Mr. Bailey explained.

Williams J. Grayson, Jr., executive vice-president of corporate development, noted that the company has a 15 percent market share in recycling aluminum, an industry that has about 50 competitors operating at about 50 percent of capacity.

Vulcan does 80 percent of all detinning in the US and 100 percent of UK detinning, Mr. Grayson said. In the tin chemicals business, Vulcan was said to have a 40 percent market share.

Peter J. Clemens, 3rd, senior vice-president of finance, noted that a $2 million improvement in chemical earnings in the latest quarter was entirely due to the lower production costs stemming from the new cogeneration project at Geismar.

Mr. Clemens observed that the company still has an authorization to purchase 391,000 of its shares out of a total authorization of 1 million which went into effect earlier this year.

On Friday, the day following the NYSSA meeting, Vulcan announced that this Wednesday, November 5, it will commence a "Dutch auction" cash self tender for between 250,000 and 1 million shares of its common stock. There are outstanding approximately 11 million shares of Vulcan common stock.

Pursuant to the tender offer, Vulcan will invite its shareholders to tender shares at prices not in excess of $124 nor less than $119 per share, specified by the tender holders.

Based upon the number of shares tendered and the prices specified by the shareholders, Vulcan will then determine the price per share that it will pay for the shares in cash. Vulcan will select a per-share price so as to enable it to purchase at least 250,000 shares if that number of shares are tendered.

Pollution Firm Acquired by IT

International Technology Corporation lost week reported it acquired New England Pollution Control Company, Inc. Terms of the cash transaction were not disclosed.

Nepeco primarily is involved in environmental remediation operations with special expertise in the treatment and recovery of groundwater. The company, with 70 employees and offices in the states of Connecticut, New York, New Jersey and Florida has annual sales of $10 million.

"Nepeco provides IT with geographic expansion in the northeastern United States and Florida while complementing our existing remediation, emergency response and groundwater recovery and treatment activities," said Murray H. Hutchison, IT's Chairman and Chief Executive Officer.

International Technology Corporation, based in Torrance, Cal., is the nation's leading firm dealing exclusively with the management of environmentally hazardous materials for government and industry. The company's common stock is traded on the New York Stock Exchange under the symbol ITX.

Biotechnology Venture Formed To Make Flavors

Igene Biotechnology, Inc. (NASDAQ: IGNE), has formed a joint venture with Biosoph Laboratories SARL, Le Pecq, France to manufacture and market naturally fermented products for the flavors and fragrances industry worldwide. Biosoph Laboratories is a member of the Burmah Group of Companies and a subsidiary of Burmah Francee SA.

Molecules Naturelles SA, the new company to be created by the venture, will be headquartered in Paris, with manufacturing operations in Rouen, France. Manufacturing will be conducted by Molecules Naturelles with the assistance of Igene and Biosoph Laboratories. All necessary government approvals required under French law are expected shortly.

US operations will be conducted through a wholly-owned subsidiary, Molecules Naturelles, Inc., based in Columbia, Md. No other terms of the agreement were announced.

"Molecules Naturelles will use Igene's proprietary microbial technology to produce natural substances designed to replace various petroleum-based chemicals now used in the manufacture of flavors and fragrances," says Robert Anslin Milch, chairman of Igene Biotechnology, Inc.

Dr. Milch estimates the worldwide market for natural flavor at approximately $12 million, with Europe and the US accounting for the bulk of these sales. "We expect to have initial products available for sale in Europe and the US early next year," he says.

According to J.G. Griffiths, managing director of Burmah Castrol Europe Limited, Swindon, England, "The joint venture represents an important new development for Burmah France following the formation of Biosoph Laboratories in France earlier this year."

Jean Paul Richer, president and chief general designate of Molecules Naturelles SA, said that the new company "intends to capitalize both Igene's demonstrated expertise in developing novel microorganism fermentation products and Biosoph's strengths and experience in esterification and the marketing of process aids.

JOBS & PEOPLE JOBS & PEOPLE

Lawrence F. Doyle, who has been appointed vice-president of human resources for the chemicals and plastics business group of Union Carbide Corporation. Mr. Doyle was formerly director of human resources for Carbide.

Celanese Names V-P, Gen'l Manager

Celanese Corporation has named C.E. Steel vice-president of resource administration at Celaneae Specialties Group in Chatam, N.J. and E.F. Ebner general manager of Virginia Chemicals Inc., the position Mr. Steel vacates.

Mr. Steel will be responsible for directing human resources, quality management, innovations programs and communications for the specialties group.

Mr. Ebner will be responsible for protecting and maintaining the profitable growth of the core business of Virginia Chemicals Inc., a Celanese subsidiary located in Portsmouth, Va.

C.E. Steel

E.F. Ebner

A.B. Cochrane, who has been appointed marketing director of chloralkali products in the chemicals group of Olin Corporation. He was most recently chloralkali marketing manager.

Degen Co. Names V-P, Sales Manager

Degen Company has appointed Robert G. Russo senior vice-president and Joseph A. Mele regional sales manager for the North-Central and Northeast areas.

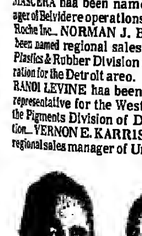
Mr. Russo will retain his responsibilities as vice-president of sales and marketing while assuming those of the senior executive of the company.

Mr. Mele joins Degen from a background in sales and marketing to the printing ink and specialty coating industry and will be working out of Degen's New Jersey office.

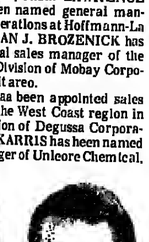
R.G. Russo

J.A. Mele

DR. CAMPBELL HAWKINS has been appointed director of corporate technology at International Group, Inc. of Agincourt, Ontario, and Lyndhurst, N.J.... LAWRENCE SIASCERA has been named general manager of Belvidere operations at Hoffmann-La Roche Inc.. NORMAN J. BROZENICK has been named regional sales manager of the Plastics & Rubber Division of Mobay Corporation for the Detroit area. RANDI LEVINE has been appointed sales representative for the West Coast region in the Pigments Division of Degussa Corporation... VERNON E. KARRIS has been named regional sales manager of Unicore Chemical, a subsidiary of Unicore, Inc... JOSEPH M. DIBUSSOLO has been appointed project marketing manager in the Corporate Development Division of PQ Corporation.



C. Hawkins



L. Mascare

N.J. Brozanick

R. Lavina

DONALD S. SOBOCINSKI has been named sales representative for the Midwest area at the Organic Chemicals Division of Pennwalt Corporation... B. B. BRADD has been appointed plant manager of Eticam's new facility in Fernley, Nev... WILLIAM E. MELBY has been elected chairman of the board of Vlobin Corporation.

JOSEPH K. KAMIENSKI has been named manager of the accounting department at National Starch & Chemical Corporation's Plainfield, N.J. office... WILLIAM T. LUTZ has been appointed vice-president of budgets, planning and control for SCM Pigments Corporation... JAMES J. HARTINGS has been elected president of Chemed Corporation's DuBois Institutional Division.

ALBERT F. JOHNS, MATTHEW M. SNYDER and FRANK ALVARADO have been appointed division managers for Princeton Pharmaceutical Products, a division of Squibb Corporation, SANDRA DICLEMENTE has been named regional sales director for the Western region and STEVE LEATHERMAN has been appointed mental health division manager.

Betz Laboratories has appointed R.P. SEGADA district manager for the Pittsburgh area, J.G. SPAGNUOLO district manager for the Cleveland area and S.J. KRAYNAK district manager for the Gateway area.

V. Kerris

J.M. DiBussolo

D.S. Sobocinski

S. Bradd

ROBIN C. PAUL has been named deputy chairman and managing director of London-based Albright & Wilson Ltd., a wholly owned subsidiary of Tenneco Inc... EARL A. CLENDANIEL has been appointed vice-president and manager of marketing and sales for the Tar & Wood Products Division of Koppers Company, Inc... CHRISTOPHER E. GIBSON has been appointed director of market development in the Printing Products & Graphics Imaging Systems Division of Eastman Kodak Company.

MEETINGS CALENDAR

November 3, 1986

THIS WEEK

AMERICAN SOCIETY FOR TESTING AND MATERIALS, 7th Symposium on Pesticide Formulations and Application Systems. Phoenix Hilton, Phoenix, Ariz., November 5-6

CHEMICAL MARKETING RESEARCH ASSOCIATION, business school, personal computers in the workplace. Sheraton Executive Conference Center, Princeton, N.J., November 5-7.

COSMETIC, TOILETRY & FRAGRANCE ASSOCIATION, scientific conference and exhibit. J.W. Marriott Hotel, Washington, D.C., November 2-5.

K-'86, 10th international trade fair for plastics and rubber. Duesseldorf, West Germany, November 6-13

NATIONAL PAINT & COATINGS ASSOCIATION, 99th annual meeting. Atlanta Hilton Hotel, Atlanta, Ga., November 3-5

THIS MONTH

AMERICAN PETROLEUM INSTITUTE, annual meeting, San Francisco, Calif., November 9-11.

CHEMICAL MANUFACTURERS ASSOCIATION, chemical industry conference. Palmer House Hotel, November 17-18, Chicago, Ill.

DRUG, CHEMICAL & ALLIED TRADES ASSOCIATION, Fall luncheon. Waldorf-Astoria Hotel, New York, November 19.

DRY COLOR MANUFACTURERS ASSOCIATION, technical seminar, requirements under the Toxic Substances Control Act. Hilton Gateway Hotel, Gateway Center, Newark, N.J., November 12

EUROPEAN PETROCHEMICAL ASSOCIATION, intermodal transport seminar. Frankfurt Sheraton Hotel, Frankfurt, West Germany, November 20-21.

FERTILIZER ROUND TABLE, Sheraton Inner Harbor Hotel, Baltimore, Md., November 17-19.

FRAGRANCE MATERIALS ASSOCIATION OF THE UNITED STATES, 10th international congress of essential oils, fragrances and flavors. Omni Shoreham Hotel, headquarters hotel Washington, D.C., November 16-20

LATIN AMERICAN PETROCHEMICAL ASSOCIATION, sixth annual meeting. Rio Palace Hotel, Rio de Janeiro, Brazil, November 23-28.

SALES ASSOCIATION OF THE CHEMICAL INDUSTRY, annual luncheon meeting. Sethwood, Totowa, N.J., November 6.

DECEMBER

CHEMICAL SPECIALTIES MANUFACTURERS ASSOCIATION, 73rd annual meeting. Marriott's Harbor Beach Resort, Fort Lauderdale, Fla., December 7-11.

NATIONAL ASSOCIATION OF CHEMICAL DISTRIBUTORS, 15th annual meeting. Ritz-Carlton-Naples Hotel, Naples, Fla., December 2-6.

SALES ASSOCIATION OF THE CHEMICAL INDUSTRY, annual Christmas party. New York Hilton Hotel, New York, December 18; education committee, seminar, "The Psychology of Selling." Treadway Inn, Saddle Brook, N.J., December 18.

LATER ON

AMERICAN INSTITUTE OF CHEMICAL ENGINEERS, center for chemical process safety, international conference on chemical safety issues, Omni Shoreham Hotel, Washington, D.C., February 3-5.

CHEMICAL MARKETING RESEARCH ASSOCIATION, Houston Meeting: "The US Chemical Industry Is Spending to Change." Westin Galleria Hotel, Houston, Tex., February 4-6, 1987.

CHLORINE INSTITUTE, Winter meeting. Mayflower Hotel, Washington, D.C., March 15-19.

DRUG, CHEMICAL & ALLIED TRADES ASSOCIATION, 61st annual dinner. Waldorf-Astoria Hotel, New York, March 19.

FERTILIZER INSTITUTE, 1987 annual meeting. Ahwatukee Orlando World Center, Orlando, Fla., February 1-3

INSTITUTE OF GAS TECHNOLOGY, 11th annual symposium on energy from biomass and wastes. Hyatt Royal Plaza, Walt Disney World Village, Buena Vista, Fla., February 2-6.

SOAP AND DETERGENT ASSOCIATION, 86th Annual Meeting and Industry Convention. Boca Raton Hotel and Club, Boca Raton, Fla., January 29-February 1, 1987.

SOCIETY OF THE PLASTICS INDUSTRY, 42nd annual conference of the reinforced plastics and composites institute, Cincinnati Convention & Exhibition Center, Cincinnati, Ohio, February 2-6.

THE FERTILIZER INSTITUTE, fall meeting. Marriott Orlando World Center, Orlando, Fla., November 1-3, 1987.

BUSINESS BRIEFS BUSINESS BRIEFS

BASF CORPORATION has formed a new thermoplastic polyurethane elastomer business unit specializing in the market development and sales of TPU "Elastollan" for the injection molding, blow molding and extrusion industries. Formation of the business unit reflects the company's "continuing commitment to US markets," BASF says.

BALL CHEMICAL Company, Glenshaw, Pa., has appointed Fairway Corporation of Houston as its sales agent in the Southwest. Ball, which maintains a warehouse facility in Houston, produces pipe coatings, industrial finishes, electrical insulating varnishes and alkyd and polyester resins.

CHEMICAL DYNAMICS Corporation has published its 1986-87 "Chemalog" handbook, featuring over 10,000 chemicals for research, development and manufacturing, including over 2,200 new products. The 750-page handbook provides CAS registry numbers, physical properties, structures and references for each item. The publication is available free from Chemical Dynamics at its South Plainfield, N.J., office.

HORIZON POLYMERS INC., Houston, Tex., has introduced two new polypropylene resin products, UHF 1100 and UHF 1500, with melt flows of 1100 and 1500 respectively. The ultra high flow products are commercially available with a variety of additive packages, including antistatic and UV incorporation, the company says.

NORANDA MINES, Toronto, Canada, says net income in the third quarter was $4.7 million; as compared with a loss of $30.6 million in the same period of 1985, despite strikes at the company's electrolytic zinc, lumber and aluminum operations. Results in all four Noranda divisions were better than a year ago, a spokesman commented.

QUAKER CHEMICAL COMPANY Conshohocken, Pa., lifted its third-quarter sales to $31,811,000 from $30,414,000 a year earlier, and its net income increased to $2,115,000 from $1,589,000, reports Peter A. Benoliel, chairman of the specialty chemical company. Mr. Benoliel cited strength in international operations and favorable currency trends, and he expressed confidence in the company's expectations for the balance of the year.

REICHHOLD CHEMICALS INC. has published a new brochure describing how "Polylite" polyester resins can be used to resurface concrete bridge decks quickly during off-peak traffic periods. The company has also introduced an all-purpose polyester resin for the manufacture of both onyx and marble and versatile enough to make small castings, vanities and large tubs, according to Reichhold.

WITCO CORPORATION's Argus Division has established a statistical process control program for the manufacture of "Pearsall" aluminum chloride. The program centers on the use of process control charts at the division's Brainards, N.J., and La Porte, Tex., plants to monitor product consistency. "Pearsall aluminum chloride is used as a catalyst to make ethyl benzene, tackifier resins and oil additives.